

The Ravenscliff Mining Company

(LIMITED).

Registered and incorporated under the Companies Acts, 1862 and 1867, with the liability of shareholders limited to the amount of the shares held by them.

CAPITAL £60,000, IN 60,000 SHARES OF £1 EACH,
FIRST ISSUE, 40,000 SHARES.

Deposit 5s. per share; 2s. to be paid on application, and 3s. on allotment.
 Calls, if and when required, to be made at intervals of not less than three months.

DIRECTORS.

FREDERICK PETERSON WARD, Esq., Director of the Scottish Australian Mining Company, and Chairman of the Yorke Peninsula Mining Company—CHAIRMAN.
 GEORGE CLERIHUE, Esq., Director of the Credit Foncier of Mauritius, and of the Yorke Peninsula Mining Company
 JOHN DARLINGTON, Esq., M.E., London Manager of the Burra Burra Mine.
 RICHARD BYAM OTTLEY, Esq., 39, Ladbroke Square, London.
 GEORGE SMITH, Esq., Chairman of the Kent Waterworks Company, and Director of the Scottish Australian Mining Company.

SECRETARY—CHARLES GRAINGER, Esq.

AUDITORS—ROBERT FLETCHER, Esq., Public Accountant, 3, Lothbury, London.
 GEORGE THOMAS RAIT, Esq., Public Accountant, 70, Bishopsgate Street Within, London.
 SOLICITORS—Messrs. SIMPSON, HAMMOND, RICHARDS, and SIMPSON, 6, Moorgate-street, London.
 REPRESENTATIVE IN NEW ZEALAND—CHARLES HENRY TURNER, Esq., Picton, Marlborough.
 REPRESENTATIVES IN AUSTRALIA—The Honourable THOMAS ELDER, M.L.C., Adelaide.
 Sir JOHN MORPHEIT, Adelaide.

BANKERS—THE UNION BANK OF LONDON, 2, Princes-street, London, } and Branches.
 THE NATIONAL BANK OF SCOTLAND, Edinburgh,

OFFICES,—1, KING'S ARMS YARD, MOORGATE STREET, LONDON.

This company is formed for the purpose of acquiring, working, and dealing with two mineral properties, known as the Turner property and the Port Gore property, situated on Cape Jackson, in the Province of Marlborough, New Zealand, containing gold quartz reefs; also the Duryea copper property, in South Australia, and such other properties of a mineral or other character in New Zealand, or any other of the Australasian colonies as it may hereafter appear conducive to the interests of the company to obtain. There exists in those colonies many partially opened mining properties of good promise and intrinsic value, which are obtainable on easy terms, one or more of which it may hereafter be deemed to be the interest of the company to acquire and develop.

THE TURNER AND PORT GORE PROPERTIES.

Three quartz reefs are known to exist on these properties. On one of them exploratory workings have been made to a limited extent, principally on the Turner property, which have resulted in showing that this reef contains gold in considerable quantity. The available length on the reefs is 1200 ft. in the Turner property and 800 ft. in the Port Gore property, or together a continuous length of 2000 ft. The properties are held on mining leases direct from the Crown for 15 years from 1st July, 1872, at the annual rent of £47 1s. 3d.

The reef already partially explored was first opened by a series of pits from the surface, and its continuity through both properties and direction and auriferous character determined. The existence of gold in paying quantity at the surface having been proved, an adit level or tunnel was put into the side of the hill at a depth of 250 ft. from the highest outcrop of the reef, which was intersected and driven on for a distance of 119 ft., and there proved to contain gold in paying quantity. Above this level four other levels have been driven, from all of which gold-bearing quartz has been extracted, and four shafts have been sunk to these levels in the positions and to the depths shown by plan No. 4 accompanying the prospectus. From No. 2 level a winze has been sunk to meet the next lower level, and a crushing of 18 tons of stone taken from this winze produced 2 ozs. of gold to the ton of stone. The stone between the two levels in the block of ground in which the winze is partly sunk has not been extracted, as No. 4 level has not yet been driven far enough to reach it.

By means of the adit or tunnel the drainages of all the workings of the mine is effected in a simple manner, the whole of the water discharging itself at one point; hence no pumping machinery is needed for that purpose. The mine can also be worked to a further depth of 250 ft. (down to the level of the sea) by means of a deep adit, with the same important advantage in regard to drainage, without pumping machinery.

Runways have been laid in the main drives, ladders fixed in the shafts, and self-acting hoppers to deliver the stone to the underground wagons. The stone is also delivered to the crushing machinery by means of shoots, hand labour for the purpose being, therefore, unnecessary.

The reefs consist generally of compact quartz. The prevailing country rock is reported by Dr. Hector, the New Zealand Government Geologist, to consist of micaceous and chlorite schist.

In the course of carrying out the work already done 1580 tons were raised and crushed, with the following results, viz.:

No. of tons crushed.	Retorted gold obtained.	Yield per ton of stone.	Where taken from.
1. 23	24 13 31	1 2 11	Turner property.
2. 30	21 0 0	0 14 0	ditto
3. 130	75 0 0	0 11 13	ditto
4. 140	99 9 5	0 12 1	ditto
5. 210	114 7 0	0 10 21	ditto
6. 250	147 13 0	0 11 20	ditto
7. 150	84 2 12	0 11 11	ditto
8. 220	137 6 0	0 12 11	ditto
9. 150	72 13 0	0 9 1	ditto
10. 200	23 0 0	0 2 12	Port Gore property.
11. 18	7 7 0	0 2 9	Turner property (from winze).
12. 20	17 6 0	0 17 7	ditto (from No. 4 level).

The average yield of the whole of these crushings is 11 dwts. of gold to the ton of stone, or if the fine crushing (No. 10) of stone from the Port Gore property be excluded, that property, although proved to be auriferous, having been acquired mainly on account of its offering a better point from which to drive the tunnel into the Turner property, the average return yielded by the crushings of stone from the Turner property will be seen to exceed 12 dwts. per ton of stone.

With the view of ascertaining whether the gold had been fully extracted from the stone that had been crushed, samples of the tailings from these crushings have been assayed here by Frederic Clendinning, Esq., F.C.S., who has certified that they contain at the rate of 8 dwts. of gold to the ton. A considerable portion of this loss of gold in tailings will probably be saved in future by perfecting the existing process, in which case the average return may be expected to reach the highly remunerative rate of 17 dwts. per ton of stone.

The machinery and appliances on the properties are as follows, viz.:

One 15-horse power steam engine, with large multitubular boiler complete, with spur gearing and driving bands and drums for pump and berdan pan. One powerful pump for supplying water to the battery. Two batteries, each of five head of stamps, each head weighing 750 lbs., revolving, with copper and blanket belts, ripples, &c., complete. One berdan pan for amalgamation, 4 ft. in diameter, with fall and drag. Retort. Powerful double winch and derrick on wheels. Iron buoy and moorings for vessels discharging coal, &c. Boat and boat-stead. Two 500-gallon water-tanks. Trucks, engines, carpenters' and mining tools, timber, quicksilver, paints, nails, and other stores. Manager's office and battery building magazine.

The engine and battery are situated close to the water on a wharf already formed; coals and stores of all kinds can, therefore, be delivered from the vessels to the wharf, and be at once placed in the engine house or store.

The properties are easily accessible by water from the adjacent towns of Picton and Wellington by steamers that ply regularly, the distance from Picton being 30 miles. Passengers, however, can land at a point about 23 miles from Picton, and reach the properties by a walk of about a mile. Machinery and stores are conveyed in six or seven hours from Picton to the battery site.

Mining labour at present can be readily obtained. There is good drinking water at the mine, and hut accommodation for about 20 men.

The position of the works at the mine is such that they can be resumed and brought into active operation immediately upon receipt of instructions to that effect by the representative of the company in the colony, every appliance being at hand for the purpose.

In the purchase of machinery and materials, and in carrying on the exploratory works, the sum of £10,546 11s. 10d. was expended, including £1225 5s. 10d. net proceeds of the gold raised. The parties who now offer the mine for sale not being possessed of the necessary means for adequately developing it, desire to part with it to a company in order that additional capital may be introduced to continue the operations and render the mine remunerative.

The whole of the properties, buildings, machinery, and appliances have been conditionally purchased on behalf of this company for the sum of £1600 in cash and £9000 in fully paid-up shares of the company. No royalty is reserved by the vendors, nor are the properties subject to any.

The leading features of the proposed undertaking in regard to these properties in New Zealand may be shortly recapitulated as follows, viz.:

- 1.—The properties are together, are easily accessible, and held at moderate rentals.
- 2.—The paying character of the reefs has been proved by a series of crushings of a large quantity of stone. The uncertainty, therefore, attendant upon a result obtained from a mere assay of samples is thus entirely eliminated.
- 3.—Much work has been done in opening out the mine, and the portion of the reefs standing between levels 2 and 4, from which 2 ozs. of gold to 1 ton of stone have been obtained, is more or less ready for extraction.
- 4.—No pumping machinery is required in order to keep the mine drained to the depth of about 500 ft. from the highest point of the reef.
- 5.—The quartz crushing and other machinery is in excellent working order, and mining operations can be resumed immediately.
- 6.—1500 tons of reef has been partially explored and known to exist on the properties.
- 7.—The vendors take the greater part of the purchase-money in shares, thus evidencing practically their confidence in the paying character of the mine.

The original plans and papers and letters from Mr. Charles Henry Turner, who has for many years held and resided on the Sheep-run, upon which the reefs are situated, and who was the discoverer of them, together with a report upon the properties by Dr. Hector, the New Zealand Government Geologist, may be seen at the Company's Offices.

Plans relating to these properties accompany this Prospectus, and are numbered 1, 2, 3, and 4.

THE DURYEA COPPER PROPERTY.

This property is situate on Yorke Peninsula, in South Australia, at a distance of four miles and a half by railway from Port Wallaroo, where there are extensive

smelting-works in active operation, and adjoins the Kurilla Mine to the south. It consists of 89 acres, held under a mining lease direct from the Crown for 14 years from Feb. 23, 1875, at the annual rent of £10. The lease is renewable. There are upon the property an 18 in. cylinder high-pressure engine and pitwork, together with captain's house and offices, carpenter's and smith's shops, stables, and engine-house, all substantially built of stone. The parties who first took up this property in the colony, having erected these buildings, sank a trial shaft on the lode to the depth of 12 fathoms, and subsequently sank a perpendicular engine-shaft at a distance of 90 ft. from the outcrop of the lode to a depth of 42 fathoms. After driving cross-cuts to the lode and exploring the latter to a limited extent, the slender principal of the local proprietors were exhausted and operations suspended. In providing and erecting the machinery and buildings upwards of £7000 were expended, and a considerable further amount in executing underground work of a permanent and highly valuable character.

Capt. Thomas Anthony, who was instructed about twelve months ago to examine and report on the property, has expressed his views as follows:—The lode as now seen in the shallow workings about the Duryea shaft is of more than ordinary size, being several feet wide, and composed of such fine gossan and green copper as, I think, justified Capt. Phillips in writing on Aug. 22, 1861: "Having carefully examined the workings, my opinion is that it has all the appearance of proving ultimately to be a valuable property." On Oct. 18 following he writes: "The black ore in the 12 ft. level, from which about 3 tons of 23 per cent. ore are taken, is a good branch in the bottom, but very little in the roof." On Oct. 22: "I am sending specimens of ore 40 lbs. weight of 40 per cent. of copper." On Dec. 18 (three months afterwards): "My opinion remains unshaken that at a deeper level the Duryea will prove exceedingly rich."

I may here say that I had the pleasure of showing Capt. Sanders, of the Burra Burra Mine (a man of long and varied experience), this lode at the mouth of the Duryea shaft, and 2 fms. below the surface, and he agreed with me that it is a fine strong back.

Capt. Tregoweth, late of the Parara Mine, a man of considerable intelligence as a practical miner, and who worked at the Duryea, tells me that there is a lode at the bottom of the engine-shaft (45 fathoms) 12 feet wide, composed of clay-state, with veins of quartz and yellow copper ore.

Taking the foregoing evidence (to which a volume might be added) in connection with the abundance of vein stuff, all saturated with copper, lying about the shafts, and led to the conclusion that the prospects of making it a good mine are fair and reasonable, were it carried (say) 20 or 30 fms. deeper, and the upper drives extended in the line of the lode.

I have got out a longitudinal and a transverse section of the working plan, accepting the depths of the shafts, &c., from Capt. Tregoweth and Powell, supported by the reports contained in the old report book at the mine. From the letters and reports of the several captains who had charge from time to time of operations at the Duryea before its present owners acquired it, I find that they all speak of the prospects of the mine in the highest terms. From the plan of the 12 ft. level it appears that there are three lodes or branches at that depth. Capt. Powell says that there is a large and strong lode in the Duryea shaft (being the shaft first sunk to the depth of 12 fms.), and that it has not been intersected by the cross-cuts driven from the engine-shaft northwards, and the plan seems to confirm that opinion.

It may not be amiss to mention that when the water was drained from section 415, a distance of about 1 1/2 miles, and in a line with the Duryea lode, the water in the Duryea shaft sank a distance of 5 ft., or to a level only 20 ft. above the bottom of the shaft at 415. I do not think that the shaft at 415 is on the Duryea lode, but on the chlorite dyke that crosses the lode at that point. It goes to show, however, that the lode is continuous up to the dyke, and also that it is both large and porous.

I have from time to time expressed myself strongly in favour of this property, and I would now refer to the general considerations which carry conviction to my mind of its prospective value.

1. Geologically considered its position is of the very best, being in the line of productive mines, which includes within its east and west boundaries the "Wallaroo," "Devon Consols," and "Kurilla" on the north, and the "Dooza" on the south, the whole being included within a distance of two miles from north to south. It can hardly be necessary to refer to that well known fact—that the profitable productiveness of mineral veins, parallel to, within reasonable distance of, and included in the metalliferous belt or zone containing one or more rich lodes, is usually a mere matter of time and labour. The ore in all cases may not occur at the same depth, and may sometimes lie in a different "matrix," but such veins generally pay in the long run.—2. Geologically I know of nothing to place the Duryea second to any mine in this famous copper mining locality, the same kind of schistose rocks in which the mines above named are situated exist here, and the occurrence of a felspathic dyke in continuity to the lode, east of the engine-shaft, can hardly be called a detracting, but rather a favouring circumstance.—3. Mineralogically the property can but deeply interest any intelligent copper miner, as at and near the surface a considerable quantity of copper ore was found, not only in the lode but in offshoots. Indeed, in its show of surface the Duryea at the time of its discovery was considered one of the prizes of this district.

Had the ore occurred on a mere pipe vein, or in a basin differing in its character and composition, and unconformable to the surrounding strata, it might be inferred that the shallow deposit was detached and isolated. When, however, it is considered that the ore was the outcome of a well defined lode, and independent of the possible conditions above named, such inference would be unfounded, and other causes for its continuance to a greater depth must be looked for, and these are found in the fact that a bed of iron pyrites underlies the shallow deposit of copper ore, or rather that the copper in a free state got so mixed up with the pyrites as to render it of little or no value. It must also be observed that the pyrites lying about the surface is so saturated with copper that the limestone crust, with which the entire locality is "capped," has absorbed it, giving the place the appearance of one immense copper lode.

I infer from the foregoing facts that beneath the pyrites the second deposit of copper will be found by those who may sink through it, and that the prospects of success are fair and reasonable.

I may add that in other hands and under more favourable circumstances it might have continued to work to this day. It was a discovery of the early days of mining on this peninsula, when a mining mania reigned, and everybody went into it in the foolish expectation of making rapid fortunes. Only a few of those speculators had the means to carry out their objects, or at all understood the early struggles attending the undertaking. The capital subscribed was derived from sources that could but ill spare it, and as soon as the excitement had passed away they found themselves involved in undreamed of difficulties, and thus the Duryea, along with many other approved mines, was abandoned at that particular stage of its development when a small additional outlay might have shown it to be in reality what the first occurrence of copper at the surface indicated.

There is an 18 in. rotary engine, with winding gear complete, erected in a good stone house, which with a new boiler, steam pipes and feed pump, would serve to pump out the water, say another 20 fms., or 62 fms. in all. The cost of boiler, pipes, and feed pump would be about £800. There are, besides, pumps in the shaft of a sufficient capacity to meet the requirements of the mine, but they have been very long under water, and probably would have to be replaced by new. To do this and put the shaft in repair I consider that it would cost roughly £1300, which, added to the £900 for boiler, &c., would be £2200. It will cost, therefore, not much less than £3000 to put the engine and pumps into order, pump out the water, and put the shaft and drivings in fair working order, and take (say) four months to perform the work.

Capt. ROBERT SANDERS, the resident manager of the Burra Burra Mines, in referring to the property, in a letter to a correspondent in London, dated 23rd March, 1876, expresses his opinion thus:—I believe the Duryea would make a good mine; it possesses all the features and elements of one, and it should be thoroughly tried. Mr. PRANSON MORPHEIT, a mining engineer of high standing and large experience, writes to the directors as follows:—In reply to your letter, I beg to state that I carefully examined and reported on the Duryea property shortly before operations were suspended. As the result of my inspection of the workings, I formed a very favourable opinion of the Duryea as a mineral property, and of its prospects, if properly and adequately developed; and I strongly recommended that the operations then in progress should be continued; but owing to the want of money my advice was not acted on.

Chittleshampton, Devon, December 16th, 1876.

It has been arranged that the working of the Duryea Mine shall be superintended on very moderate terms by Capt. Thomas Anthony, with whose qualifications as a mining manager the directors are fully satisfied, concurrently with his present employment on the adjoining Kurilla Mine. They have also secured the valuable co-operation of the Hon. Thomas Elder, M.L.C., and Sir John Morpheit, as a Committee of Inspection in South Australia.

A conditional contract has been entered into for the purchase of the Duryea property and mine for £3000 in cash, £2000 in fully paid-up shares, and a royalty of 1-25th part of all ore to be raised.

The plans relating to this property, which accompany the prospectus, are numbered 5, 6, and 7.

The directors will proceed with operations at the Turner and Port Gore and Duryea Mines as soon as such a number of the shares shall have been subscribed for as will, in their judgment, be sufficient for dealing adequately with them. It is considered that it will not be necessary to call up more than a moderate amount of the company's capital for that purpose.

No promotion money is to be paid, and no expenses will be incurred other than those necessary for the formation and establishment of the company.

Agreements have been entered into as follows:—

(1.) Between Frederick William Turner, as attorney for Charles Henry Turner, John Henry Dalton, William Evans Dive, Thomas Galloway, William Welland, and Augustus Joseph Charles Ward, all of the Province of Marlborough, New Zealand, of the one part, and Charles Grainger, as agent for and on behalf of a certain company proposed to be established under the title of the Ravenscliff Mining Company (Limited), of the other part, dated the 11th day of February, 1877; and (2) between the Yorke Peninsula Mining Company (Limited), of the one part, and Charles Grainger, as agent for and on behalf of a certain company proposed to be established under the title of the Ravenscliff Mining Company (Limited), of the other part, dated the 13th day of February, 1877.

The Memorandum and Articles of Association, and conditional contracts, may be seen at the offices of the company's solicitors.

Applications for shares must be made on the form accompanying the prospectus, and the sum of 2s. per share be paid to either of the company's bankers, or the same may be remitted by cheque (crossed under Bank of London) to the Secretary, No. 1, King's Arms Yard, Moorgate-street, London, E.C. In the event of less than the number of shares being applied for, the amount paid will be applied towards the deposit of 5s. per share. In case no allotment shall be made the amount paid will forthwith be returned in full.

Copies of the prospectus, and forms of application for shares, may be obtained from the company's bankers, solicitors, or at the offices of the company.

FORM OF APPLICATION FOR SHARES.

(To be left with the company's bankers.)

To the Directors of the Ravenscliff Mining Company (Limited).
 GENTLEMEN,—Having paid to your bankers the sum of £ , being 2s. per share on shares in the Ravenscliff Mining Company (Limited), I request you to allot to me that number of shares, and I hereby agree to accept the same, or any less number you may allot to me, and to pay 3s. per share (being the balance of 5s. per share) upon allotment; and I authorise you to place my name on the Register of Members for the number of shares that shall be allotted to me.
 Name (in full)
 Address
 Occupation
 Date 1877. Signature

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES—No. XX.

BY J. CLARK JEFFERSON, A.R.S.M., WH. SC.

Certificated Mining Engineer.

(Formerly Student at the Royal Bergakademie, Clausthal).

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SECTION II.

PROSPECTING FOR MINERALS—BORING.

II.—THE CONSIDERATION AND DESCRIPTION OF THE SEPARATE BORING TOOLS.

It was pretty evident that such an important invention as that of Fabian was not long destined to remain in its incomplete condition without some attempts at improvement. Its great improvement was effected by Herr A. Werner, of Arnshall, near Arnstadt, and first employed at Friedrichshalle, near Coburg, in 1856. The following is the inventor's description:—

The effect of Fabian's apparatus depends on the difference between the moment of inertia of the falling rods plus that of the water, &c., at the bottom of the hole, which would be set in motion by the broad face of the borer, plus the friction of the sides of the borer against the sides of the borehole, and the friction of the wings upon their seats or ledges. The greater the sum of the first and the smaller the latter the easier will the instrument be worked. The apparatus works the more easily and exactly when the falling rods are light, when there is fresh slime at the bottom of the hole, when the bore hole deviates somewhat out of the perpendicular, and when the friction between the wings and their seats is brought to a minimum by making both of hard well-polished steel. The work is the more difficult when the weight of the shaft rods is small, the bore hole clean and perfectly vertical, or when the friction between the wings and their seats is very great. In this case the borer can only be caused to fall by a very strong and sudden twist from the borer master, and when the upper rods are sufficiently stiff to transmit the shock down to the free falling apparatus. Deep bore holes require to have a considerable diameter, and the upper rods are tolerably heavy, so that even when 1 in. square iron rods are used the work required of the borer master becomes excessively exhausting, and with the use of wooden rods is impossible (hence the superiority of Kind's apparatus over that of Fabian).

Werner's free falling apparatus may be said to be Fabian's provided with an auxiliary apparatus. The apparatus proper consists of an upper piece, to which the shaft rods are fixed, and a lower free falling piece to which the borer is attached. The free falling piece consists of a round rod of iron 1 1/2 in. in diameter and about 4 ft. 3 in. long. The lower end which swells out and is square (1 1/2 in.) in section is tapped, so as to allow of the lower rods or borer being screwed into it. About 3 1/2 in. from the upper end the falling piece is provided with a pair of wings. So far it resembles the free falling piece of Fabian's instrument. About 9 in. below the wings it is provided with a second pair of wings, inclined at about 70° to the direction of the upper pair. The upper piece consists of two flat plates about 1/2 in. thick, which contain a slit each, 3/4 in. wide. These two plates are dovetailed horizontally, and riveted to the neck piece at their upper ends, the lower ends are similarly connected by inserting a cross piece between the two plates and bolting or riveting the three together. The cross piece has a circular hole through which the falling rod passes. The neck piece terminates as a square 2 in. rod, which screws into the shaft rods. The auxiliary apparatus consists of a cap piece or piston made of a leathern disc, stiffened on the upper and under side by sheet-iron discs. The cap has a square hole in the centre, so that it can slide up and down over the neck piece between the top of the apparatus and a stop ring fastened on to the neck piece with a set screw. Two vertical plates are bolted to the cap piece, the lower ends of the plates being connected by a ring or box, which slides easily, yet not loosely, over the apparatus proper. On the inner side of these plates, about 5 in. from the lower end, and exactly opposite each other, two wedge-shaped pieces of steel are riveted. The sides of these pieces corresponding to the hypotenuse are curved, and on these the lower pair of wings glide. As in Fabian's apparatus a ledge or seat is cut or filed at the top of the long vertical slit, and on the left hand side, so that a motion towards the left will throw the wings off their seats. The position of the two wedge-shaped pieces of steel is such that with an upward (relatively so to the rest of the apparatus) motion of the cap they move the lower wings and, consequently, the falling rod and upper wings to the right.

The action of the instrument is as follows: When the borer falls and rests at the bottom of the bore hole the upper boring rods are lowered, and the upper wings slide in the long vertical slits, and the lower wings are guided by the guide plates (i.e., wedge pieces) until the upper wing is vertically over its seat. Now, whilst the motion of the rods is changed, and continues to be an upward motion, the cap rests upon the shoulders of the instrument. Now, when the rods have been raised to their highest position, and again begin to descend, then the pressure of the water beneath the cap retards its motion and that of the side plates and the guide plates, so that the latter strike against the lower wings and twist them round to the right, when the upper wings are thrown off their seats into the long vertical slits, and the lower rods and borer having no support fall to the bottom. The condition to be fulfilled in order that the apparatus may work is that the play of the cap upon the rods is somewhat smaller than the difference between the fall of the borer and the lift of the rods. The amount of play should not be more than 1 1/2 in. to 2 in.

The cost of one of Werner's instruments, weighing about 240 lbs.,

* Being Notes on a Course of Lectures on Mining, delivered by Herr Bertrath Dr. von GODESCHE, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany.

THE CHINESE POLYTECHNIC INSTITUTION AT SHANGHAI.—The gentlemen in this country identified with the promotion of Western knowledge in China having been much impressed with the popular science lectures which have been for some years past delivered at the Royal Polytechnic in London by Mr. J. L. KING, F.G.S., determined a short time since to purchase the whole of the costly apparatus necessary for inaugurating similar lectures at Shanghai, and to invite the Chinese Ministers and suite visited the Institution in London to witness some of the most interesting phenomena connected with the production of light and other branches of optics, as shown by a new apparatus intended for an institution at Shanghai. The demonstrations were conducted by Mr. KING who delivered a brief lecture explanatory of the scientific principles which determine the phenomena, and who stated that the occasion derived its chief interest from the fact that it marked an awakening in the Chinese mind to the importance of scientific instruction. The Chinese Institution owed its origin mainly to the influence of Mr. KING, of Shanghai, who was formerly Secretary of the Shanghai Legation, was Chairman of the Shanghai committee, and Mr. Fryer who acted as its honorary secretary. Their views have been energetically supported by our ambassador Sir Thomas Wade, and by many of the leading mandarins, among whom may be mentioned Li-Hung-Chang, whose name has a European celebrity, Feng Chia-jui (Gaoi, of Shanghai); Hsu Tsuch-Tsun and his sons, who are well known throughout their own country for their technical skill and scientific enlightenment, and by many others who favour the importation of Western knowledge of every kind. It is calculated that the cost of the apparatus has not exceeded £1000. The new institution will be the first step towards satisfying the patriotic aspirations of the Chinese people. A building has recently been erected at the city of Shanghai, within which lectures are to be given and interesting apparatus and processes shown, and likewise a reading-room provided with suitable works is already in active operation. A new scientific magazine, in the Chinese language, has been established in Shanghai, edited by Mr. Fryer, the honorary secretary of the Institution. An influential committee of co-operation with the Shanghai committee has been formed in London, and Messrs. J. and F. Rogers, of London, have been appointed the European agents of the undertaking. At their office in the London committee meet, and it is under their direction that the apparatus just exhibited has been made. The directors of the London Polytechnic, who have manifested a sort of parental sympathy with the Chinese institution, were present

to receive their guests, who were both numerous and distinguished. Mr. King's lecture gave great satisfaction to his visitors, and was in every respect most successful. Among the articles being sent out to China by Messrs. Bourne and Co. are several of their new high speed engines, which are believed by the most competent judges to be destined to become the steam-engines of the future. One of these engines will be employed to drive a Tante emery wheel, which acts like a rotating file in rapidly polishing metals, and sharpening cutting instruments. This machinery attracted much attention. The most promising feature in connection with the present movement in China is that it is adopted and pressed on by the Chinese themselves. The first step in all such innovations is the most arduous, and it appears now likely to be taken with success.

ROYAL CORNWALL POLYTECHNIC.—The forty-fifth annual exhibition of this society is announced to open at Falmouth on Aug. 28, and that Prize Lists and all other necessary information will be furnished on application by Mr. Edw. Kitto, the secretary. At the present time the desirability of introducing more economic processes for making ore marketable is especially apparent, and young miners may well be advised to compete for some of the prizes offered for improvements in this direction; for they should remember that the intrinsic value of the prizes is but little compared with the great advantage that must accrue in securing the adoption of an invention, the practical utility of which is certified by the award of the Council of the Polytechnic Society. The prizes of this class include—a Premium by the society for improved Machines for, or modes of, Dressing Ores; a Premium is offered by the society for Collections of Ore and Country in which the relations of one to the other are carefully marked; and three Premiums, in books, by the Editor of the *Mining Journal*, value 3l. 3s. for the best, 2l. 2s. for the second best, and 1l. 1s. for the third best papers, by practical miners or others engaged about mines, upon a method, mechanical or chemical, of making marketable, with commercial advantages, ores or minerals raised from mines in Cornwall or Devon, and hitherto regarded as worthless. The books to be chosen by the writer of the paper. In the case of mechanical methods not in actual use, it must be demonstrated that the apparatus is simple, durable, and not liable to get out of order. In the case of chemical methods not in actual use, samples of the products in the various stages must accompany the paper, in proof of the practicability of the process. It is much to be hoped that this year the number of competitors for these prizes will be large, and that their efforts will be such that the Council will be justified in awarding all the premiums offered.

MINING AND STOCK EXCHANGE NEWS OF THE WEEK.

Messrs. F. W. MANSELL and Co. (Sworn Stock and Share Brokers), 43 and 43A, Palmerston Buildings, Old Broad-street, write to us as follows:—

ISABELLE (Gold and Silver).—This company holds an extensive series of Gold and Silver Mines, comprising 9425 linear feet upon a mineral belt of six parallel gold and silver lodes, situated in Scandinavian Canyon, Silver Mountain, Alpine County, California. The sett of 9425 linear feet on the centre of the six lodes, "with all dips, spurs, and angles," includes likewise all lateral extensions and underlies of the several veins, as well as an admirable mill site, with water-power and timber ranches.

These Gold and Silver Mines were originally purchased upon the recommendation of Mr. Lewis Chalmers, the manager of the Exchequer and I.X.L. Mines, which are immediately adjacent to this property.

The Isabelle Gold and Silver lodes run almost parallel to the south to the I.X.L. Company's mines, which again are parallel south to the Exchequer mines. Authorities who are generally acknowledged as disinterested have for many years in their published official reports to the United States Government clearly enunciated as an axiom that only horizontal or stratified deposits of silver ore, aqueous in origin, and usually accompanied by a large proportion of base metals, are found in limestone or dolomite rocks. No matter how rich the mines, how easily worked or the ore reduced, these mines have no permanency. When exhausted there is then seldom any clue afforded to other "pockets" or strata of a similar evanescent description. However promising they appear superficially, not even an expert can ever exactly tell beyond the "pick" when such deposits "pinch out." Even if, perchance, again found they may be irregularly placed in some locations not covered by title. They frequently change their character in depth; silver-lead mines, which are generally met with in limestone formations, may gradually lose the silver which rendered them valuable, while the lead increases in purity and quality. On the other hand, in true fissure veins of igneous origin, where the silver ore is found free from base metals, but carries with it a fair percentage of gold superficially, such gold almost invariably increases in depth, as is the case in the Consolidated Virginia and the Isabelle Mines.

English investors are apt to confound all mines in one category, without reference to their distinctive geological features. It is not unworthy of consideration on this side of the Atlantic that Americans have as yet never sold in England, as may be judged by results, a fully developed mine upon a well-defined true fissure vein. To secure similar profits from mines of this established permanent character English investors require to imitate Americans, and wisely choosing virgin ground in accordance with geological principles performing the work for themselves *ab initio*, instead of paying large sums in cash for mere shells.

The geological formation of the Isabelle Mines consists of eruptive rocks, the lodes consequently have well-defined walls, with the usual accompanying "clay selvages," which in such cases are properly esteemed unerring indications of value, and of a true fissure character, created at unknown and unapproachable depths by plutonic agencies.

The dip of fissure veins is nearly vertical, or within a limit of 30° from the true perpendicular. In this splendid district gold and silver lodes are as a rule found to run within a few degrees of magnetic north and south, allowance being, of course, made for deflections caused by configuration of "country." These granite and porphyry walls—not limestone—are the true matrix of gold and silver ore in fissure veins, which being of igneous or plutonic origin are geologically asserted to be inexhaustible, increasing in quantity and value as depth is attained in their development. It may also be mentioned here that the nearer a gold and silver bearing vein approaches the vertical of 90° in its dip the richer or purer are the deposits of ore, because this indicates that the plutonic mineralising agency which created the vein originally has been in degree stronger in its eruptive action upwards.

As an illustration of this it may be mentioned that some of the mines upon the Comstock Lode, not 40 miles distant in a northerly direction, with similar characteristics, are extracting rich gold and silver ore at the immense depth of nearly 2000 ft. from surface, thus practically proving the permanency of true fissure veins, and at the same time establishing the faith to be placed in such lodes.

The salient points of the Isabelle Mines are—(1) A mineral belt of six parallel gold and silver lodes, a feature recommending them to every practical miner; (2) a mining sett of 9425 linear feet, four times the extent of leading dividend mines elsewhere; (3) true fissure veins of igneous origin, and in virgin ground; therefore, geologically considered, inexhaustible deposits of gold and silver ores; (4) the probability that in depth these various lodes may be found to converge into one vast mass of mineral, compact in quantity and uniform in richness; (5) titles clear and unimpeachable; (6) capital extremely moderate in comparison with more prominent mining companies, consequently dividends reckoned as a percentage upon capital indicate by comparison greater inducements, with less risk to investors; (7) the vendors have such entire confidence in the value of the mines that they prefer to accept paid-up shares in lieu of any other payment; (8) a competent and reliable resident director, who is already thoroughly acquainted with the mines, and has been personally known for many years to the directors; (9) water and timber sufficient for all purposes, free, except for the necessary labour cost; (10) labour readily obtainable, and mining operations not prevented by winter; (11) at Carson City, 50 miles distant, there is the United States Mint, to which bullion can be sent for conversion into coin; (12) there is very little deadwork to start with, because the proposed tunnel follows the course of the lodes; (13) directors accept no fees, their remuneration being a percentage upon the net profits realised.

Assays of the ore taken from superficial depths merely show an average yield of \$108 (22l.) and \$62 (13l.) per ton in silver alone. The cost of mining and reduction of this ore into bullion is estimated at about \$15 (3l.) per ton. Assuming an output of 50 tons per day, and average gross value at only \$50 (8l.) per ton, this gives \$2500, or 400l. per day. Deduct (in order to cover all expenses probable or improbable for cost of mining and milling) \$20 per ton, multiplying net result by 300 working days, the annual net returns are 94,500l., equal to 75 per cent. upon the capital.

But will the mines yield 50 tons per day? Certainly; but not at

once. The works must have sufficiently progressed to admit of a force of men being employed in exploitation numerous enough to achieve this, or more. The production of a mine is in proportion to the strength employed, and to secure a continuous supply the progress of development must be kept well ahead of the extraction of mineral. The above estimate is based upon low-grade ore, and it remains with each to draw conclusions from premises or arguments frankly tendered for consideration without greater bias than seems almost inseparable from the subject.

Prof. Raymond, in one of his official reports to the United States Government, gives a tabular statement of twenty companies working in the aggregate 16,000 linear feet on the Comstock lode, which affords reliable data. Characteristics of that lode, and of ore taken from it, are almost identical with those of the Isabelle, from which it is distant about 40 miles. In one year the Comstock Mines yielded 400,000 tons of ore, yielding \$21,000,000, equal to 4,200,000l. sterling. Accordingly each of these mines has an average of 800 linear feet of lode, and an output of 20,000 tons (70 tons per day) each, of the value of 210,000l. sterling per annum. At the same rate of ascertained productive value, if measured only by comparative extent of mineral ground, the Isabelle Mines, when developed sufficiently, ought to turn out 645 tons per day, equal to 235,625 tons per annum, which at the same valuation would be worth 2,591,875l. sterling. But as the Comstock Lode is productive only about one-seventh part of its entire length, this divisor may be fairly applied to reduce the preceding figures into the more credible totals of 92 tons per day, or 33,660 tons per annum, valued at 370,267l.

In previous papers upon the Isabelle Mines we have set forth the mineralogical reasons justifying the opinion that at least one of the veins parallel to the Great Mother Lode—called by the experts Big Mother Lode—will in depth become essentially gold-producing. Additional testimony upon this important point, as affecting the remunerative future, is afforded by no less an authority than Mr. John J. Cooper, whose ability and integrity as a mining engineer are vouched for by the eminent firm of Messrs. John Taylor and Sons; moreover, Mr. Cooper's family connections in this country are in themselves an absolute guarantee of good faith. During a recent inspection of the Isabelle Mines, Mr. Cooper says: "It is very seldom you will find lodes on surface so thickly impregnated with mineral as is the case with these lodes." . . . "There must be large bodies of solid mineral below; it has been proved by their neighbour, the Exchequer, that the rich ore bodies in this district are not on surface, although the indications in this case are that they are not far off."

The Exchequer, I.X.L., and Isabelle are considered by Mr. Cooper to be the main lodes of the district, and he will be very much disappointed if, when they are developed, they do not turn out immense riches.

As to the expenditure necessary to bring about profitable results, Mr. Cooper says: "It is evident these Isabelle lodes will not be expensive to develop, not nearly so much so as many others in the neighbourhood; and I must say I consider this will turn out a very valuable property; the mineral being continuous throughout the lodes on the surface indicates that it will be so in depth, but instead of its being scattered throughout the rock it will be found in solid masses."

In concluding this notice, we may refer to one of the most material considerations in an enterprise of this character—that perfect safety for English investors in any foreign mine, remote from home rule, necessarily depends upon the strict integrity, truth, and ability, under all phases, in circumstances of the local management abroad, London directors, no matter how respectable or attentive to their duties, are as a consequence of geographical distance in some measure circumscribed to administrative functions of a financial character. Ability, economy, and fertility of resource on the part of the executive at the mines are qualities upon which English investors should essentially rely for those profits which the original premises safely warranted. In the case of the Isabelle Mines, the directors have wisely selected as resident director a gentleman known to them for many years, and who originally recommended the property, having been for a long time resident on the spot, and who would not risk an established reputation unless convinced that a more thorough and scientific development of these mines would add lustre to his career as a mine manager.

The directors are—The Right Hon. the Earl Poulett, Chairman of the Exchequer Gold and Silver Mining Company; Major-Gen. Chas. Campbell, director of the Exchequer; Mr. Robert Gillow Dunn; Major-Gen. F. A. Campbell, C.B., R.A., Woolwich; Captain Daniel Bayley, Oriental Club; Mr. Henry Syme, F.R.G.S., director of the Exchequer; and Mr. Lewis Chalmers, resident director.

I. X. L. (Gold and Silver).—Some time since it was mentioned in these papers that the I. X. L. ore, like the Comstock, contains gold, which in relation to silver increases with depth. This is substantiated by twelve assays of the I. X. L. ore, yielding an average of \$27.88 for gold and \$240.28 for silver—\$346.90, or 70l. per ton. I. X. L. has also the same geological formation as the Comstock, and in the same mineral belt, the lodes having similar clay selvages, separating the country rock from the quartz; the character of the quartz is identical. When I. X. L. was first discovered a general rush of miners took place from the Comstock Mines, and it was only through sheer providence that I. X. L. ever fell into the hands of English owners. Recent developments at this and the other mines in Scandinavian Canyon are again creating excitement, miners from the surrounding districts (including Comstock) flocking in great numbers to Silver Mountain City.

In the early days of this district, when at I.X.L. the richest description of ruby silver had been found just under the cropping, eager prospectors covered the mountain, especially in the immediate vicinity of the pioneer discovery, and before the year had expired nothing was left in the shape of a ledge or outcrop to locate; the same, taken up two or three times over on some of the spurs or angles of the I.X.L. lode, and all found a place in the records of the then formed Silver Mountain Mining district. Upon this general rush to the New El Dorado buildings of all kinds were erected in anxious haste, but very little useful work was done. Capitalists offered exorbitant prices, but not enough to satisfy the rapacity of the owners, who would neither work themselves nor sell to those who would. The reaction came, the fitful fever died out, capitalists left in disgust, and among the few mines at which any attempt was made at systematic development was this I.X.L., the stock of which continued to command a very high premium, and the capital injudiciously expended in superficial workings, and wasted in ill-digested plans, would, had it been applied to deep development in a systematic manner, have placed the I.X.L. in the foremost rank of producing mines. As it was, however, some \$50,000 was taken from the ore stopes. Mistake seems to have followed mistake; the ore required roasting, and 50 per cent. was lost by neglecting this precaution; one sample of 50 tons was run through the Whiteside mill without being roasted, and even then gave \$70 instead of \$140.

As we have pointed out upon previous occasions, these few facts sufficiently account for the apparent anomaly of such a property coming into the possession of English owners upon such favourable terms. Hitherto Americans have never sold in this country a developed mine with a true fissure vein in the porphyritic formation; and as results are proving in the Comstock Mines and in the Exchequer the deeper the works the greater the percentage of gold and silver, it must be admitted the market value of I.X.L. shares to-day cannot be accepted as any guide of their investing value in the almost immediate future.

Ruby silver in the richest form, and occasionally native silver, are found, the quartz clear and lively, quite up to the standard of excellence demanded by the most exacting expert or devoted admirer of quartz as a gold and silver bearing gangue. The ore is an antimonial sulphuret silver, black sulphuret, and dark red and light red silver ore. The antimonial sulphuret, or miargyrite, contains 35.5 per cent. of the precious metal, dark red silver ore 59 per cent., and the light red as much as 65.4 per cent.—these are called ruby silver. The black sulphuret when pure contains—silver, 87.04; sulphur, 12.96. The finest bullion ever produced at Reno, at a cost to the mill of not more than \$13 per ton, came from I.X.L. ore, the bullion was 901 fine. Everything presents a diagnosis to justify the highest possible appreciation of the future of I. X. L., when fully developed.

The preliminary expenditure has been incurred, much unproductive though imperatively indispensable work accomplished. In the future results of I. X. L. Mr. Lewis Chalmers, the manager, shows the greatest confidence by having undertaken to superintend the development of the mine until it pays dividends without any remuneration whatever beyond his bare expenses; and the influential directors (all very largely interested in the property) decline to accept any fees except out of net profits.

The latest official advices (dated March 19) state that the manager was then busy getting the hoister overhauled and erected preparatory to sinking to the 400 ft. level. The north drift was in 525 ft. from cross-cut on the 200 ft. level, 12 ft. 6 in. having been driven during the week. This drift is in a well-defined ledge, 4 ft. thick, and is running 20° west of north, and pitching 55°; 3 ft. 6 in. of solid quartz in face, which is looking a good deal like the quartz in the old upper tunnel. Considerable water issuing from face. The rise was up 160 ft. from drift, 12 ft. having been raised during the week; it is in fine ledge matter going along the hanging wall; the footwall has not been seen for over 100 ft.; the ledge is apparently big. The Ophir ledge, on the 200 ft. level, was looking well. The engine had been taken to pieces and hauled to the I. X. L. hoisting-works; the foundation timbers were all ready.

The following are the directors—The Right Hon. the Earl Poulett (Chairman of the Exchequer Gold and Silver Mining Company, Limited), Hinton St. George, Somerset, and 7, Palace Gate, W.; the Viscount Lord RANKLAGE (Chairman of the Conservative Land Society), the Carlton Club; Lieut.-General HENRY RIGBY, R.E., Clarendon Gardens, W.; and Oriental Club, W.; W. G. ROMANE, Esq., C.B. (Director of the Exchequer Gold and Silver Mining Company, Limited), The Priory, Old Windsor; Major General CHARLES CAMPBELL (Director of the Exchequer Gold and Silver Mining Company), 18, Gloucester place, W., and Portland Club, W.; FRANK HENRY SCOTT, Esq., Bishopdown Grove, Tunbridge Wells; Colonel BEVY STRACEY, 1, Morpeth Terrace, S.W., and the Guards Club, S.W.; HENRY SYME, Esq. (Director of the Exchequer Gold and Silver Mining Company), 60, Palace Gardens-terrace, W.

EXCHEQUER (Gold and Silver).—The latest official advices (dated March 19) announce that the mill was started on Saturday, and that the furnace was in full blast. With the exception of one pan and one settler, which were not quite tight, everything was running well. In order to fill up crevices and grind the new shoes and dies of the pans, the mill was running on low-grade ore. The furnace tests would be made on first-class ore in a few days. At the mine the No. 2 stope in the 100 ft. level was driven 9 ft. during the week; the vein, 2½ ft. of No. 1 ore, and 2 ft. of mixed ore. The No. 1 stope in the 200 was driven 22 ft.; vein 23 in. and 2 ft., mixed with first-class ore. No. 2 stope in the 300 was driven 12 ft.; vein 2 to 5 ft., 1 ft. of good ore. The 400 drift was driven 6 ft., and two sets of timbers put in; vein 2 to 3 ft., with good ore. The Accacia Tunnel was driven 4 ft. Everything looked well in the mine, and the foreman adds there will be no trouble to keep the mill running. Under date March 21 the manager writes—"To-morrow we finish running on low-grade ores. After to-morrow we commence making the furnace tests, and I hope to be able to furnish you with cheering results."

Referring to the Silver Mountain district the Alpine Chronicle says: "The great revival that is now progressing in our county—but more particularly in this (Silver Mountain) district—in mining is attracting attention on the outside, and daily we notice new faces in the street. Our companies are preparing for a vigorous mining campaign the coming summer, when competent miners and mechanics—steady men—will find remunerative employment."

The same authority, dated March 17, referring to the Exchequer, says: "This morning the Exchequer Mill and O'Hara Chas. napon Furnace commenced work on Exchequer ore. The people of Monitor are expecting 'big things.' The most notable event of the week, however, is the starting up of the O'Hara furnace, the successful working of which cannot be doubted, its success at Peavine proving that such a process for reducing our ores is all that we require to place Alpine at the head of the mining counties of California."

The Alpine Chronicle also says:—"Elisha B. Smith of San Francisco, arrived on yesterday's stage, under an engagement with Manager Chalmers to take the superintendence of the Exchequer mill and furnace. A long acquaintance with Mr. Smith enables us to say that Mr. Chalmers could not have secured the services of a more competent superintendent. Having had great and manifold experience in silver mining in Mexico, having resided in that God-forsaken country, engaged in mining operations, twelve years, he is just the man we require to manipulate Alpine ores."

Another authority has the following:—"The Exchequer mill has been entirely rebuilt. It has 13 stamps, and has in connection with it an O'Hara Chas. napon Furnace, which is capable of working 30 tons of ore a day. This mill has been planned by Manager Chalmers with a view to its doing its work with the little manual labour as possible, and is one of the best-appointed mills on the Pacific S. Ope. It has been placed by Mr. Chalmers under the full control of E. B. Smith, of San Francisco. Mr. Smith had charge of the O'Hara furnace at Peavine when it made its successful run on Peavine Consolidated ore, and we are satisfied that the new mill will be run successfully under his management."

The ores of the Peavine district are very rebellious, containing antimony, arsenic, copper, zinc-blende, and lead, and all previous attempts had failed to reduce them. Mr. O'Hara undertook to erect a furnace upon the condition that if he did not extract 80 per cent. of the precious metals contained in the ore he should not receive anything for his work; the furnace was built, with the result that 90 to 95 per cent. was easily obtained, assaying \$100 per ton. The same character of ore had been previously taken to Reno and roasted by a Stetefeldt furnace, but no bullion was obtained. The latest advices from Peavine state that the Consolidated Peavine Mines (whence was taken the ore treated by O'Hara) was turning out \$10,000 to \$15,000 in bullion per week. The following are the directors of the Exchequer Company:—

The Right Hon. the Earl Poulett, Hinton St. George, Somerset, and 7, Palace Gate, W.; the Right Hon. the Lord LOUTH, Louth Hall, Ardee, and the Justice United Service Club, S.W.; Major General CHARLES CAMPBELL, 18, Gloucester place, Hyde Park, W., and the Oriental Club, W.; Mr. W. G. ROMANE, C.B., The Priory, Old Windsor; Mr. SAMUEL SMITH, 15, Stratford place, W., and the Portland Club, W.; Mr. HENRY SYME, F.R.G.S., 60, Palace Gardens-terrace, W.

GENERAL MARKETS.—The semi-panic which in the earlier part of the week paralysed all stock markets was succeeded by comparative steadiness, resulting in a moderate recovery in some classes of securities. This was followed again by severe depression, produced by the receipt of reduced prices from the continental Bourses. Home suffered far less than foreign, as is reasonable, considering that the cause of trouble comes from the foreign direction. Apart from a few investments in railway stocks the public seem to be still doing very little in the Stock Exchange, where the great bulk of the business has consisted of sales of foreign stocks on foreign account. Home securities should certainly not suffer in the way they do, for investments in this direction are likely to be stimulated if war occur, but there is yet reason to hope that one or other of the probable combatants will make concessions rendering peace more likely.

MANUFACTURE OF AMMONIA.

In some cases the gases evolved in blast-furnaces used in manufacturing iron and the cyanogen combined with them are allowed to escape into the atmosphere, but in other cases they are conveyed in tubes under steam-boilers to generate steam. With a view the better to utilise them Messrs. ISRAEL SWINDELLS, of Warrington, and ROBERT LANCASTER, of Widnes, propose to inject superheated steam into the tubes containing the gases and cyanogen, either before or after they act on the steam-boilers, the steam, gases, and cyanogen thus combined are passed through incandescent fuel, and the vapours thus formed are condensed by any well-known process to produce ammonia. In carrying out the invention they take from any conveniently formed blast furnace for smelting iron the gases and cyanogen therein generated, and pass such gases in combination with highly superheated steam through any conveniently formed pipes or pipes into a closed and highly heated iron retort or clay furnace, of suitable size and dimensions, and erected in a vertical or other position, into which incandescent fuel or other material may be inserted. In superheating the required steam they prefer to adopt the means employed in iron-smelting furnaces for heating the hot blast.

The combination of gases thus emitted in the latter process are further conveyed through any convenient form of pipe into a solution of lime, cream of lime, or other caustic base, when it is found needful to absorb all or any portion of carbonic acid which may exist in conjunction with the remaining gases. The residue of these gases are also further conducted through suitably formed pipes into a highly heated closed vessel or chamber filled with broken bricks or other material to combine the latter gases, and thereby produce ammoniacal gases, which gases may be passed through, cooled down, and condensed in towers constructed of any convenient material,

form, and dimensions, into which broken bricks or other material may be placed, or by any other known process of condensation. In the manufacture of muriate or other salt of ammonia the muriatic acid must be poured into the top of the condensing towers to meet the ascending vapours, but without the use of acids caustic and carbonate of ammonia may be produced.

LANGNESS (ISLE OF MAN) COPPER MINE.

Few mining enterprises in the Isle of Man have been watched with greater interest or have excited more general attention, amongst Manx people particularly, than that which this week comes before the public for the first time as the Langness Mining Company (Limited), which is to be registered under the Isle of Man Companies Act. The new company's property is a large one, and forms a great part of the promontory of Langness, in the south of the island, with right to explore for minerals under the bed of Castletown Bay for a distance not less than half-a-mile from low-water mark. The property has been thoroughly explored by a small private company, known as the Derbyhaven Trial Company, who have been at considerable pains and have spent a large sum of money in proving the value of the property. Their discoveries, which are faithfully set forth in the prospectus, are indeed of rare value. They have two very powerful lodes, with outcrops of rich ore, of 10 and 20 in. thick respectively, and several strong, well-defined cross lodes, and their trial operations have proved beyond question the strength of both these parallel veins. The large, or 20 in. vein has been sunk upon to the greatest depth, and it carries the same high-quality ore every inch of the way. This and one 10-in. vein (which has not been as fully proved) underlay towards each other, and it is fully expected that they will form a junction at from 40 fms. to 50 fms. in depth, where the mining men who have inspected the place predict a large body of ore will be found. Some of the stones of solid ore which have been got out in these trial operations weigh over 3 cwt., and in one block alone a mass of ore was liberated which afterwards was found to weigh half-a-ton. It is no wonder that, with such successful preliminary results, considerable excitement should exist in the island, and there is little doubt that the shares will be rapidly subscribed for. The confidence of the in-ular public is the stronger because the Langness adventurers have evinced no desire to thrust the property into the market, but have gone on developing it as far as their means would allow until they are able to show a bona fide investment, with unusually excellent prospects of early results. And besides this it long ago oozed out that Prof. Warington Smyth, the Government Surveyor, had expressed a high opinion as the merits of the property, and the excellent prospects of the company. It was not likely that so promising a place could long escape the notice of mining men, and many of these have from time to time visited Langness from distances so remote as London, Devonshire, and Cornwall, and what they have said about it has added to its reputation, and it now stands confessedly on all hands—and has been so described over and over again by men whose names need only be mentioned to prove their competency as judges—as one of the finest young mines in the United Kingdom. The copper ore taken out of Langness has been frequently assayed, and it has never averaged less than from about 20 to 25 per cent. of pure metal.

The capital of the new company will be £5,000, in 15,000 shares of 3s. each, of which only one-half will be called up, and it is not expected that any further calls will have to be made before returns are secured. The vendors part with the property for the moderate sum of £10,000, one-half of which they accept in shares. There certainly has seldom been a young mine floated with equal prospects of success, nor one that has been placed before the public more honestly.

MINING ENTERPRISE IN COLORADO.

The development of the mines belonging to the Revenue Mineral Company having so far progressed as to enable the executive to determine not only the probable ultimate value of the property, but the best method of hastening the return of profits to the shareholders, it was determined at the recent meeting to issue the remaining unallotted shares, and thus ensure the utmost possible dispatch in the completion of the works. Considerably more than one-half of the capital has been already subscribed, and on Jan. 1 there was an available unexpended balance of £7314.3s.11d. It was explained that the work during the winter 1876-7 upon the Revenue lode laid bare a large quantity of excellent ore in the small section of the mine upon which contracts were let. This ore it was intended to send to market during last summer, but owing to the impossibility of obtaining adequate and safe carriage, and the fact that it was found the mineral was costing twice as much to mine and three times as much for transport by pack animals as will be the case when the wagon road and the low-level tunnel are completed, it was decided not to sacrifice the ore beyond marketing a sufficient quantity of all grades, so as to practically test the value of the mine, and to guide in selecting the best means of treating and disposing of the produce.

These results are particularly favourable, and exceed the estimates on the basis of which the mine was purchased. Parcels of ore from different parts of the mine were sold, varying from 52 ounces to 310 ounces of silver to the ton, one shipment carrying 37 per cent. of lead and another running as high as 17 per cent. copper, the whole yielding an average of 96 ounces of silver to the ton.

The Britannia tunnel, which is virtually the key to the entire property, has been pushed forward night and day at a cost below the estimates, but the continued hardness of the rock causes serious delay; at present, however, more than three-fourths of the entire estimated length to the Revenue lode is finished, and during the coming summer the network of mineral veins discovered will be explored.

From the practical experience now gained, with actual sales of the ore, and a knowledge of the cost of winning it, an approximate estimate of the future of the enterprise can be fairly arrived at. In the following calculation the figures of the superintendent and mine captain are either actual or have been closely considered. There can be no doubt that some of the lodes already tapped are of much value, but for the present they prefer to deal, as has been done since the outset, with the Revenue alone, which is a sufficiently proved mine. The aggregate cost of mining, treating, and conveying to Denver will not exceed \$35 per ton, so that, estimating the value of the ore at only \$75, which is \$7 lower than last year's average, the profit would be \$40 per ton, or \$120,000 per annum from Revenue alone.

A charter has been obtained for a wagon road, and a mill will be erected. The entire machinery for this mill, including steam-engine, will cost \$1000, to treat 30 tons of low-grade ore per day, which will bring into profit rock that at present is discarded, and will dress it up from probably 20 ozs. per ton to 100 at very small cost. Capt. Tonkin estimates that there is at present, lying in piles around the Revenue shafts, at least 700 tons of 50-oz. ore which has been stripped from the ore marketed since the opening of the mine, so as to enrich that portion to bear carriage. This ore will all be brought down and concentrated. The mill besides will crush and sample the first-class ore, and so prevent the advantage that ore-buyers take with the unsampled ore.

The Revenue Mineral Company's property is described as being most favourably situated. The Decatur Mountain forms the ridge which divides the watersheds of the Pacific and Atlantic slopes. The Revenue Mine is upon what is recognised as the *veta madre*, or champion lode of the district, on which almost follows the skyline. Below it in the mountain face, and parallel to it, are half a dozen minor veins, all of which will be cut by the tunnel now driving. Operations hitherto are said to have been very successful. The ore is delivered at the various reduction works in its raw state, having been first roughly separated by hand from the rock. It is crushed, sized, and further separated by machinery, then "roasted," to drive off the sulphur, again crushed, and next delivered to the "chargers" on the "mining floor," immediately above the furnace-house. It is there carefully mixed with fuel (coke or charcoal), and with iron ore, limestone, or slag, and this mixture is fed into the furnace at the rate of 15 to 20 tons per diem. About every two hours or so the furnace is "tapped" from below, and the molten metal (base bullion) is drawn off, together with the "matte." The slag is then cleaned

out of the crucible, the "breast" is bricked up again, the smelting goes on as before, till, after several weeks, the fire-brick requires to be renewed, when the furnace has to be "blown out." The base bullion consists chiefly of lead, containing some 300 ozs. of silver to the ton. The copper is chiefly contained in the "copper matte," and is re-smelted by itself.

With reference to the physical advantages of Colorado as a field for mining enterprise it is to be remarked that the State occupies a large area both east and west of the Rocky Mountains. Several of the loftiest peaks of that grand continental range arise in the centre of this extensive territory, one-half of which is a fertile and well-watered plain, destitute of trees, while the western portion is a table land with much timber, and with a tolerably good soil. But the mineral riches of Colorado—its gold, silver, iron, and other metals—have engaged a great part of the immigrant population, and many successful undertakings have been established. It is remarkable that Colorado at the present time contains probably a larger resident British population than any State in the Union. Apart from the traveller who is constantly met with—attracted by sport, scenery, or the magnificent climate—there are numbers of young Englishmen settled there, either engaged in stock-raising on the plains or mining in the mountains, and each class helps the other, the mining camps being, as a rule, excellent markets for farm produce of all kinds. The majority of the miners resident at these places are Cornishmen and Nova Scotians, with a fair admixture of Germans and Swedes. Cornishmen are unrivalled in hard rock; whilst experience gained in the Government works at Clausthal and Freiberg brings German operatives into great demand in the smelting works. Hitherto the ore has been packed on mules and sent to market, either at Georgetown or to the neighbouring district of Hall Valley. But local works are now in process of construction. The development of Colorado has been only second in rapidity to that of California, and its people are sanguine that, owing to the permanent nature of their mines, they will secure the State as bright a future as could be desired.

ON THE MINERAL PRODUCTS OF RUSSIA.

Russia in Europe, including Poland and Finland, has a population of about 70 millions, and an area of 2,041,950 square miles. The total area of Europe is 3,800,000 square miles, so that Russia possesses more than half the whole territory of Europe. Russia in Asia or Siberia is about one-half larger than the whole territory of Europe, being in area 5,486,750 square miles. Russia in America (divided from Siberia by Behring's Straits) has an area of 391,000 square miles. This gives a total of 7,922,740 square miles of territory, exclusive of some recent additions to it. So vast an extent of country we may suppose must contain almost unlimited mineral resources, nearly the whole of the geological formations as found in Britain being developed in Russia, and occupying large areas.

In 1841 Sir R. Murchison undertook a geological survey of Russia in Europe, including the Ural Mountains. Since then a more intimate knowledge has been obtained of its mineral resources. The Silurian are the oldest stratified rocks; these are followed by the Devonian and the Carboniferous systems; on the latter rests the Permian system, so named from its extensive development in the province of Perm, in Russia. This is followed by the oolite, chalk, and tertiary strata of Western Europe. The Ural Mountains were until lately the main source of minerals. From this district gold to a large extent is obtained from washings. Mines exist here which furnish copper, zinc, iron, lead, silver, tin, platinum, and ironstone. Salt is manufactured largely, and is obtained from quarries of rock salt near Iletzk, from salt lakes in the Crimea, Bessarabia, and Astrachan.

The total production of Russian mines in 1871 is given from statistics published by the Russian Government (Department of Mines):

	Tons	1868	Tons	1871
Copper	100,367	100,367	100,367	100,367
Lead	4,411	4,411	4,411	4,411
Gold	3,514	3,514	3,514	3,514
Tin	369	369	369	369
Iron	38	38	38	38

The production of copper ore is about the same as from the British mines, while that of zinc is much larger. When we look at the item of coal, however, we view with astonishment the disparity in the quantities extracted in the year 1871; the quantity in that year in Britain being over 117,000,000 tons, against 817,008 tons in Russia. An explanation of this is to be found in the fact that wood is largely used in Russia as fuel, both for home and metallurgical purposes, but the requirements of railways, ironworks, and other manufactories are now beginning to make demands on the immense stores of coal and ironstone deposited in the Dominion.

The rate of increase in the produce of coal and ironstone in Russia is as follows:—

	Coal	Ironstone	Coal	Ironstone
1840	1,000,000	11,419	1,000,000	11,419
1850	4,368	12,411	4,368	12,411
1860	159,032	180,768	159,032	180,768

The importation of coal into Russia has also been increasing during the above periods, the importation from Britain in 1871 being 872,538 tons, and about a fourth of this from other countries. We thus see that with all its reputed wealth of coal fields the imported English and other coal exceeds the quantity raised in the country. We must investigate further as to the quality of Russian coals to obtain a solution of this seeming anomaly. The Russian people are either deficient in capital or enterprise to develop their coal deposits, or the coal is deficient in the high qualities possessed by many English and Welsh coals, for house, steam, cooking, and gas purposes.

In European Russia there are four principal coal fields, besides a few minor ones:—

1. COAL FIELD ON THE URAL CHAIN.—This deposit extends along the flanks of the Ural Mountains, both on the west and east sides, of limited breadth, but extending along the length of the chain. Three seams are mentioned as being worked here, from 3 to 7 ft. in thickness. The coal is composed of about 65 per cent. of carbon and 15 of ash. The total produce of this coal field is very limited.

2. THE COAL FIELD NEAR MOSCOW.—This is stated to extend over an area of 12,000 square miles. Two seams of coal are mentioned, of 3½ ft. and 7 ft. in thickness. These are also impure coals, the average of 55 samples giving 18 per cent. of ash. The carbon is about 60 per cent. The coal field has apparently been subjected to great denudation, and in valleys still further, to within a short distance of the Old Red Sandstone formation, on which it rests, so that there is only a limited depth of deposits and but little covering on the seams.

3. THE COAL FIELD OF SOUTHERN RUSSIA.—This coal field is probably equal in area to the last named, but consists of a much greater depth of deposits, and several seams of coal 30 ft. in aggregate thickness. The coal seams are bituminous in one part and anthracite in another part of this district; they are richer in carbon than those of the other districts mentioned above, and contains less ash, the seams being worked vary from 3½ to 5½ ft. in thickness. Both this and the coal field of Moscow belong to the Lower Carboniferous series, analogous to the lower coal series of Scotland.

4. THE POLISH COAL FIELD is about 80 square miles in area, consisting of nine seams of coal, eight of which range from 3 to 6½ ft. in thickness, but the ninth has a thickness of about 20 ft. This series of coal are believed to be the true coal measures, and rest on the Silurian formation, the Carboniferous Limestone and Old Red Sandstone not being deposited. The coals here vary very much in purity, some having a small admixture of ash and sulphur, others much more.

Besides these four districts, there are deposits of coal in Turkestan, in the Caucasus, and in Siberia, of which little is known. That of Siberia is reported to be of very great extent, probably several coal fields, not at all developed, wanting capital and enterprise to make, probably, some great discoveries of mineral wealth.

The peculiarity of the Russian coal fields is their immensity, the limited depth of deposits of each, and the small extent to which the ascertained coal fields are worked in proportion to their great extension. It is true that the supply of wood is plentiful, and is applied to the same purposes as it was in this country a century ago, but this supply must speedily fail as railways are extended and

fresh demands for fuel arise, both for locomotive and manufacturing purposes. The length of railway in use in Great Britain at the end of 1874 was 16,044 miles; that open in Russia was 10,900 miles on 44 railways. The latter with its extensive territory has yet reached but little more than half the railway development of Britain. Cold and sterile though a large proportion of the country be the railway must be the pioneer to open out its mineral wealth, making discoveries in its almost unexplored regions, and thus aiding the industry and prosperity of the kingdom. If the natural resources of the country were better developed its wealth would be increased, and its people more contented. There would then be less reason for them to covet the sunnier and brighter land of the Turks.

ECHOES FROM THE MINING MARKET.

The warlike aspect of affairs upon the Continent, although it has seriously disturbed the quotations of foreign stocks and home railways, has not exercised any appreciable effect upon the mining market. Beyond a few changes in foreign shares, and a decline in East Van, prices have remained in a state of quietude, perfectly undisturbed by the rumours which have had such a powerful effect upon the other markets. As we have already stated in these columns, mines generally would have little to fear from an Eastern war, as there would arise an increased demand for metals, and consequently higher prices for ores. Should, on the other hand, war be finally averted at what now appears to be the eleventh hour, the relief to the public mind from the subsidence of the long debated and heartily hated "Question," would assist in lifting the incubus which has so long weighed down trade, and in clearing the way for better times. What is now wanted is simply that the "question" be finally settled one way or the other, for as Turkey is reported to have stated in rejecting the Protocol, the present position of affairs is intolerable.

To turn to the market, we have to note a general hardening tendency in the prices of dividend lead shares, and a fair demand for those of the progressive class. Of the first named, Great Laxey (cum div.), Roman Gravel, Leadhills (cum div.), Van (cum div.), and West Chiverton, have been in most request, although there have been some enquiries for both Lisburne and Minera, whilst of the progressive class, Rookhope, West Tankerville, and Derwent have been the favourites. Llanrwst have advanced to 2½, Aberdunant are 10s. to 12s. 6d., Pennerly quiet at 11s. to 13s., and Tankerville at 8 to 8½, owing to postponement of dividend. The mine, is looking well. The 180, west of Watson's shaft, is worth 3 tons of lead per fm., and in five days over 30 tons of ore have been broken. Van Consols have been weak at 2 to 2½, although reports speak well as to the progress made in the development of the Van lode. A call of 2½ per share has just been made in Frank Mills. It is hoped that with the new dressing appliances the mine will before long be worked at a profit. At Clementina the shaft produces 1 ton of lead per fathom, and the 25 end the same. The Glyn shaft is down a trifle over 16 fms. under the 28, and the lode is promising in appearance. The lead-dressing apparatus is in a forward state. The mine below the 95 in Roman Gravel is worth 3 tons, and in the south 2 tons of lead per fathom. The monthly sale at West Tankerville is estimated at 35 tons. The North Laxey accounts show a balance of assets over liabilities of 3292. For the 12 months ended March last the expenditure, exclusive of 574, on machinery account, has amounted to 4538, and receipts for lead sold to 1886. Since the present company commenced working in 1873, 16,330, have been expended, and about 7000, worth of lead sold. No loss has been made by the failure of the Barry Port Company.

Copper shares have been represented by Belford United, Hingston Down, Devon Consols, Parys Mountain, Cathcart (tin and copper), Marke Valley, West Saxon, and West Tolcar. A slight enquiry has also been apparent for Belford. We understand the 45 stop has improved. Some further good improvements are expected, as the mine looks very promising. Parys Mountain appears to be also improving, and there may be something good reported from the 90 cross-cut shortly. The progress of this cross-cut has so far been very disappointing. The 55, west of Highburrow shaft at Penrith, has improved for copper.

Cornish mines have been neglected. On Monday last a dividend of 5s. per share (107½) was declared at Decatur. The companies with 7s. 6d. last year, and 10s. 6d. this year, carried forward is very small—115. The average price of tin sold during the quarter was 27. 4s. less than last, making a difference in the returns of about 650. It is said the fall in tin during the last three years has made a difference in the receipts of nearly 50,000, equal to a dividend of 10l. per share. The mine looks well, and shows, like Tincroft, increased productiveness at its deepest levels. The richest point is in the engine shaft, under the 338 fathom level, where the lode is worth 800, per fathom. The 338 cut is worth 500, per fathom, the 328 worth 600. The south lode is worth 800, per fathom, as it has been opened, is valued at 250, per fathom for a 6 ft. The lode is 9 ft. wide. During the quarter 233 tons of tin have been sold, at about 42½ per ton. Total credits, 12,696, less debts 634, (120th). Total costs, 10,992. Some excitement was created at the meeting by the attacks of a well known Camborne merchant upon the management. His strictures, however, were too personal to find much sympathy amongst the adventurers present.

The third monthly dividend, at the rate of 30 per cent. per annum, has been declared in Holmshurst, and the shares have advanced to 30s., 8s. The total profit for the quarter has amounted to 1244. Upwards of 8000, have been realised by the company by the sale of its shares at a premium, and this sum has very properly been carried to a reserve fund. A new copper mine has been started in Gwynnapp, with the somewhat convivial name of South Ale and Cakes. The mine is contiguous to the once celebrated Clifford Amalgamated, formerly known as "Ale and Cakes." Providence Mines are still working, and there are some promising points in operation, but little can be done to improve the position of the adventurers unless in advances. Wheel Basset has lost 21½, on three months' working.

The colliery market has continued without alteration, and quotations in many cases are purely nominal. In the foreign share market Richmond and Flagstaff have been offered, and the price of both show a decline. A fair demand has existed for Frontino, I.X.L., Exchequer, New Zealand Kapanga, and Eberhardt. Javali are weaker.

JAMES H. CROFT.

THE WEEK.

SATURDAY, APRIL 7.—No relief came to the operators for a rise, and many had to close at a larger loss than would have been made yesterday. Monday is the last day of the present account, and there does not now seem much chance of a rally. A good number of dealers are burdened with stock that they took up before the holidays, expecting the public would after Easter relieve them, but so far they do not show any disposition to do so. Russian of 1873 receded to 84½ (¾ worse). In Hungarian of 1871 there was a drop of 1½, to 60. Altogether the foreign market was a very flat one. Railways also gave way all round, but the closing prices were above the worst. Caledonian, for instance, after being sold at 122½ touched 122½. North British fell ½, to 95. Central Illinois closed 81 lower—84½ to 84½. Erie Brothers was 2½ at 25½. Fore-street Warehouse at 12½. Credit, 6 7-16ths; Hudson's Bay, 13½; and North Metropolitan Tramway, 17½.

MONDAY.—To-day at the finish Russians were no better than 83½, one of the railway loans—Tamboff Kosloff—fell as much as 5. Railways were a flat market. Caledonian gave way to 122, and Great Western to 103. American securities had to be sold for less than yesterday. Erie fell to 84½, and Central Illinois to 84. Atlantic First Mortgage, 81½ to 81. Second, 84½ to 84½. Third, 84½ to 84. Midland Bank shares rose to 36½, Anglo-Egyptians were 13½ to 14, and Imperial 16½ to 17. In collieries, New Harton declined to 4, and Thorp's rose to 15. A fair business was done in mining shares. West Tankerville, Great Laxey, Sierra Buttes, and Exchequer were wanted. Wheel Crebor, 2 to 2½. Wheel Grenville, 1½ to 1½. Pateley Bridge, 2 to 2½. Richmond, 5½ to 6.

TUESDAY (making-up day).—Notwithstanding operators for a rise have been closing for days past the settling day disclosed in railways a large weak bull account, and with the exception of a backwardation of 5s. in Berwick contingents prevailed all round, many of them being rather severe. Russian of 1871 was again scarce; the back in the morning was 18, but increased to 18½, later in the day, or 7½ to 10s. per 1000, operators for a fall being a good deal puzzled to decide whether to close at about 83, or pay the rate and wait for a further fall. The stock at one period touched 82½, but the last price was 83½. This was reached outside at a very late hour of the day, owing to the eager desire of a few to avoid the back; a rumour was also circulated that Turkey had made a favourable reply to the Protocol. The same rumour checked the downward tendency of railways, which formerly had been running down at rather a perilous rate, and being thus braced up they left off far better than could have been expected at one time, though still in some instances showing a considerable change for the worse. Berwick dropped ½, to 10½; North British 7½, to 94½; Midland 5½, to 128; and Caledonian 3½, to 121½. Central Illinois declined to 84½, and Edinburgh Tramways to 15.

WEDNESDAY.—Russians had a serious fall to-day. Hungarians were thrown wildly about, and towards the close quite a panic raged, equal to what was witnessed in October of last year. The 1873 Loan of the first named opened 82½, and by noon was 1 per cent. lower. Finally there was a plunge to 78½, a fall of 4½. The 1872 issue lost 4½, closing 76½ to 77. Eight days ago the 1873 Loan touched 89, the lowest hitherto reached this year being 79. Mention was made last week of Hungarian 6½ per cent. 1873, having reached 92, from 72 in December. To-day they lost 4½, closing at 84. Railways were not in much better plight, the Scotch lines being especially flat. Caledonian fell 2½, to 119½; British 1½, to 92½; Great Eastern lost 1½, 48½ to 49½; Brighton, A. 1½, 105 to 105½; Dover, A. 1½, to 113½ to 113½; and Metropolitan District 1½, 48½ to 49½. The last prices were about the worst of the day.

THURSDAY.—Several operators for a fall being frightened into closing, Russian, 1873, opened considerably better than last night's prices. At 80½ a rather large business was done, but the rise was not long maintained, and finally the price was quite as low as yesterday. An ominous rise in saltpetre was reported in the colonial markets. Railways were inclined to firmness, but a further drop in Consols checked them, and they closed dull. Great Eastern and Brighton, A. however, maintained the morning's improvement. In mining shares the chief feature was the fall in Flagstaff to 24, and in East Van to 6. Llanrwst, 2½ to 2½; Gold Run, 3½ to 3½; Aberdunant, 12s. to 14s.; North Laxey, 14s. to 16s.; Eberhardt, 8½ to 8½; and West Chiverton, 10s. to 12s.

FRIDAY (opening).—Russian of 1873 was fairly firm at the commencement at 78, but soon receded 78½, then recovered to 77½, 77½. Egyptian, 1873, being 43½ to 49. Caledonian, 119½ to 119½. Metropolitan District, 43 to 43½. Great Eastern, 49 to 49½. The somewhat conflicting reports from abroad are interpreted according to the wishes of rival operators who are engaged in a keen struggle for the mastery, prices being banded about a good deal in consequence. Flagstaff, 2½ to 2½; Richmond, 5½ to 5½; Eberhardt, 8½ to 8½; Parys Mountain, 7s. 6d. to 8s. 6d.; Llanrwst, 2½ to 2½; Aberdunant, 12s. to 14s.; Rookhope, 18s. to 20s.; North Laxey, 14s. to 15s. 6d.; Van Consols, 2 to 2½. —Two o'clock.—With the exception of Russian being 77½ to 78, there is not much change. Turks are 10½ to 10½, and Egyptian Unified, 35½ to 36. Railways are fairly steady, but there is only a small business doing. Midland, 127 to 127½; Birmingham, 147½ to 147½; North British, 93½ to 93½; Great Western, 101½ to 101½; Dover, A. 112½ to 113; Great Eastern, 49½ to 49½. Consols are 95½ to 96; and New, 94½ to 95. —Four o'clock.—Russians are slightly harder (78 to 78½), and Hungarians are somewhat better, but Consols are weaker. Great Eastern, 49½ to 49½; British 93½ to 93½; Great Western, 101½ to 101½; Midland, 128½ to 127½; and P. & F. Russia shares are quoted 1½ to 2; Chapel House, 3 to 3½; Pateley Bridge, 2 to 2½. Birchin Lane, April 13. FERDINAND R. AIRK.

BRITISH MINES.

EAST VAN.—Wm. Williams, April 12: I have no change to report from here this week. I think we had better rest on the sinking of Tempest shaft in about week or so.

EAST WHEEL LOVELL.—R. Quentrell, April 11: Fatwork: I am glad to say that during the past week the lod in this 1.0 west has become larger and contains more tin. It is now 3½ ft. wide, worth 10¢. per fathom, and is promising to further improve. We are driving east and west on the new lode at the 17, which is

MELLANEAR.—John Gilbert, April 11: There is no change to notice in the 30, west of the ship-skip, since last week; the lode is still small and unproductive. The lode in the 50, west of the ship-skip, is 2 ft. wide, producing a little copper ore, but not sufficient to keep the men from sinking the lode. The 67, near the bottom, to communicate with the rise in the 67, there is now about 7 fms. of ground to sink between the bottom of the level and the rise, which will take about a month to accomplish. When holed this will ventilate the

100 ft. per fathom. No. 1 stope, 100 ft. south of Stokes' winze, by four men, at 55, per fathom, worth 4 tons per fathom. No. 2 stope, by six men, at 55, per fathom, worth 4 tons per fathom. No. 3 stope, by six men, at 55, per fathom, worth 3 tons per fathom. No. 4 stope, by six men, at 60, per fathom, and worth 3 tons per fathom. No. 5 stope, by four men, at 70, per fathom, worth 4 tons per fathom. The 50 to drive south of Stokes' winze, by two men, at 70, per fathom, worth 1 ton per fathom. The middle level, north of the 50, to drive south of Stokes' winze, by four men, at 70, per fathom, worth 1 ton per fathom. The middle level, north of the 50, to drive south of Glover's winze, by four men, at 110, per fathom, worth 1 1/2 ton per fathom. No. 1 stope, in roof of the soil

condition the drying must be effected by any suitable process which are prompt and economical: the clay is then ready for manu-

MANUFACTURE OF ASPHALTUM.—The essential property of the asphalt made according to the invention of Mr. E. Rocheman, of Cairo, is its power of entirely resisting solar heat without experiencing any depression in consequence of the softening of the material under the solar influence. Trials have also shown that it resists the action of cold, and that it does not experience under the influence of frost any contractions resulting in fissures in the mass. It is to give the asphalt the property of resisting solar rays that Mr. Rocheman proposes to take as the base of his manufacture a particular clay called in geology fossil clay, and which is found in abundance in the old alluvial earths of Egypt. This clay is, therefore, the chief feature in his manufacture, it is to it the stability of his products is due, and also the hardness which they offer to the tramping of men and animals, as well as to the pressure and friction of vehicles, but in the manufacture of this asphaltic clays of another kind, possessing of themselves the qualities of the fossil clays which are found in Egypt, or which are brought by different means to that state, are capable of producing the same results. In the process of manufacture the first operation consists in carefully grinding the clay either by hand or by suitable machinery until it is reduced to a state of impalpable powder in sifting it in order to remove foreign matters which may have got mixed with it, and in again reducing it. In this state it is necessary to be assured that it is as dry as possible, and if it is not in this essential condition the drying must be effected by any suitable process which are prompt and economical: the clay is then ready for manu-

facture. As to substitutes for the Egyptian clay, he avoids especially saliferous clays, but for the most part, under the conditions herein before explained, clays of all kinds can be advantageously employed when they are purified and carefully dried. Clays he says are in a chemical point of view, hydrated or hydriferated aluminous, siliceous, sometimes mixed with more or less pure quartz sand, on account of their origin, which connects them with the destruction of different kinds of rocks. These clays purified will quite answer the purpose. It follows, then, from this essential consideration that the more or less fine or more or less pure clays generally employed in the manufacture of bricks, and of fine or coarse pottery, pipes, crockery, and porcelain, are excellent materials for the manufacture of the asphalt; also all debris of bricks, pottery, crockery, and porcelain, broken and pulverised. All these materials, the base of which is clay, have the property of absorbing bituminous matters, and of forming therewith compact and resisting mixtures, having properties such that they produce asphalt of very good quality, and capable of being applied for various purposes.

* * With this week's Journal a SUPPLEMENTAL SHEET is given, which contains: Original Correspondence: Commerce in the Superior Metals for the First Quarter of 1877; Australian Gold Companies (T. Dicker); Rock Boring Machinery (R. Sanders); Northamptonshire Iron Ore (B. W. Hart); Lancashire Mines, and New Patent Dry Ore Concentrator; Mining in Newfoundland; Roman Gravel; Capt. Tregay, and Pedra-an-drea Mines (W. Tregay); Parys Mountain Mines; New Consols Mines (E. Skewes); Bedford United Mines (T. B. Laws); Cardiganshire Mines—A.D. 1877—No. XI. (A. Francis); Water Wheels; the So-called Barnard Process; the Mineral Resources of Canada—Registration of New Companies; the Scotch Mining Share Market—Foreign Mining and Metallurgy—Australia Mines—Foreign Mines—Lancashire Mines—Special Report—Machine r. Hand Labour in Mining—Patent Matters—Meetings of West Mostyn, Llanes, Alamillos, Fortuna, New Consols, Great Laxey, North Laxey, and Dolcoath Companies, &c.

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The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, APRIL 13, 1877.

IRON.	£ s. d.	£ s. d.
Pig, 60 lb., Clyde, 2 14 0		
Do, 60 lb., No. 1, 2 15 0		
Do, 60 lb., No. 2, 2 15 0		
Do, 60 lb., No. 3, 2 15 0		
Do, 60 lb., No. 4, 2 15 0		
Do, 60 lb., No. 5, 2 15 0		
Do, 60 lb., No. 6, 2 15 0		
Do, 60 lb., No. 7, 2 15 0		
Do, 60 lb., No. 8, 2 15 0		
Do, 60 lb., No. 9, 2 15 0		
Do, 60 lb., No. 10, 2 15 0		
Do, 60 lb., No. 11, 2 15 0		
Do, 60 lb., No. 12, 2 15 0		
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At the works, 15s. 6d. per box less for ordinary; 10s. per ton less for Canada; 15s. 6d. per box more than 10c quoted above, and add 6s. for each X. Terms: plates 2s. per box below tin-plates of similar brands.

REMARKS.—With the exception of short intervals with slight variations our markets since the autumn have continued to droop, and at no time has there appeared any positive indications of the downward tendency being arrested, or the prospect of a settled improvement in the demand. Although in the ordinary course of business orders invariably increase as the year develops, yet such is the extraordinary state of the times through which we are now passing that instead of a better trade there is not even the symptom of the least promising change; but on the contrary, a very uneasy and apprehensive feeling in regard to the future, and bad as trade has been, and undoubtedly continues to be, it is still thought by many that matters may become worse before they are better, and in the present uncertain state of political, as well as commercial, affairs it does not seem at all unlikely that this may be the case, and it, therefore, behoves every one to be most guarded in their operations, and on no account to accept risks of a doubtful character, or to enter into engagements beyond their own resources, otherwise the result may be far from satisfactory. It is better, in fact, to err on the side of caution and do nothing for awhile, than to be doing badly and incurring losses, and thereby rendered powerless when a favourable opportunity does present itself for action.

For some time past we have repeatedly urged upon one and all to adopt a cautious policy as the most discreet and safest course to pursue at such a perilous period as the present, and not to be encumbered with heavy responsibilities, and it is satisfactory to know that many have acted upon our recommendations, and have now every reason to congratulate themselves upon their position, for those who have ventured to speculate have suffered considerably, and the deplorable condition into which our markets have drifted may result in still more disastrous consequences. There are some upon whom good advice is always thrown away, and others who are possessed with such restless dispositions that to have to wait for the opportunity is too painful a task, and they plunge heedlessly, recklessly, into speculations that frequently terminate in failure. If the losses they made were limited to their own money it would be of no concern of others, but unfortunately their misfortunes have often to be borne by innocent persons who can ill afford to bear them. To enter into a forward contract without having fair and reasonable means of fulfilling it in the event of the market price declining shows an utter want of honest principle, and such a practice ought to be severely censured whenever it transpires. A purely speculative transaction is a very different matter to a regular trade bargain, where open credit is given, and no man of honour will ever suffer the loss arising out of these dealings to exceed his means, but close the contract forthwith, and immediately make good any difference; indeed, it is a shameful breach of trust, and a most unwarrantable offence for a man to keep a contract open after his own capital is exhausted merely upon the bare chance of a favourable turn occurring in the market.

COPPER.—Another week has passed, and another fall has taken place, and the equanimity of the market continues to be greatly disturbed by the unsatisfactory state of trade generally and the alarming state of politics in particular; so that a further declension in value appears inevitable. The cry of war is quite sufficient to deter speculators from operating—at least, those who have anything to lose—and the legitimate demand both for shipment and consumption seems too limited to enable holders to maintain the market at its present height for any length of time. The stock being so heavy is a very weak point of the market; and should a declaration of war be made a bad impression may ensue, and another collapse take place. In any case, sales would become difficult at any reasonable price, as no one would care to be burdened then, and a continuous pressure to realise would cause a settled fall in the market. There is certainly no prospect of prices recovering yet awhile, and unless holders are prepared to shelve their copper for six or perhaps 12 months they had better sell out without delay. But until war is positively declared there exists a faint hope that peace may be preserved, and the chance remains of disposing of some parcels; therefore, all weak holders should not hesitate to avail themselves of what will probably be their last opportunity. The present time is too critical for any but strong firms and large capitalists to be doing business of any magnitude, and safety should be the first consideration of all buyers.

On Monday the price of Chili bars was quoted 71s.; Wallaroo, 70s.; and Burra, 72s. Quotations remained the same on Tuesday, but on Wednesday the market was down 20s. per ton; this was owing to the unfavourable reply to the Protocol from Turkey, and also to the announcement of the Australian monthly sales of copper. The quantity of Burra for sale on the 17th inst. is 200 tons, and 406 tons of Wallaroo. On Thursday the market was wanting in animation, three months' Chili bars were offered at 70s. 10s., but buyers would not give more than 70s. The Board of Trade Returns of the exports of copper for March compare rather more favourably, and it is most essential that they should continue to improve. The mail leaving Bombay on the 17th ult. showed a more hopeful market, and barriers had advanced 2d. per cent., although still slightly lower. Yellow copper had declined 3d. per cent. Advances from New York of March 31 state copper is quiet, but steady; sales of Lake Superior amounted to 170,000 to 180,000 lbs., at 19½ c. to 19½ c. To-day the feeling is less depressed, and the disquietude of the two pre-

vious days has in a measure been overcome, but at any moment it is quite possible to be again reversed, for the market remains in a most feverish and sensitive state, and subject to corresponding influences that are operating adversely upon all the Exchanges of Europe, and there is consequently no security from one day to another.

IRON.—The general condition of the market is unsatisfactory, and prices continue to droop, but according to the Board of Trade Returns shipments are increasing. Thus, the total exports of iron and steel in March were 176,918 tons, against 149,196 tons in 1876, and 164,067 tons in 1875. The accounts from the North of England are very unfavourable. The holidays are said to have been unusually extended on account of the extreme depression. In South Durham stocks are reported to be increasing, and in March there was an addition of 25,564 tons, the aggregate stock now being 225,395 tons, and it is thought that immediate steps will be taken to reduce the production of pig-iron, which is greater than at this time last year, while the consumption is much smaller. The demand for manufactured iron is also dull, and prices of both wrought and unwrought are easier. In Scotch pigs there is little or no change, and mixed numbers are now quoted at 54s.

Week ending April 7, 1877.	Tons	9,971
Week ending April 8, 1876.	Tons	8,558
Increase	515	
Total decrease for 1877	3,148	
Imports of Middlesbrough pig-iron into Grangemouth:—	Tons	6,095
Week ending April 7, 1877.	Tons	5,845
Week ending April 8, 1876.	Tons	250
Total increase for 1877	11,412	

The total shipments are 97,600 tons, against 100,462 tons in 1876, 132,669 tons in 1875, 116,775 tons in 1874, and 169,048 tons in 1873. The depressed state of our iron trade is no exception to that of other countries, for Belgium is also in a feeble condition, and the French markets are inactive, and the usual spring demand is disappointing, and prices are not improving; but, on the contrary, the future holds out no prospect of amendment. The rolling mills, however, have sufficient work just to keep them going from the receipt of orders for daily requirements, but the value of pigs is lessening, and Luxembourg pigs are only quoted at 36s. 6d. per ton. The comparative imports and exports of iron into France show a diminution for the year. The quantity of iron rails ordered last year of French ironmasters was only 38,000 tons, being a decrease of 39,000 tons as compared with 1875. From America the reports are by no means encouraging. In New York Scotch pigs are quiet at 24s. 7½ for Eglington, 26s for Gleanagrock, and 27s for Colness, and sales are confined to immediate requirements. The market is also dull for American pig and old rails. From India the advices are also discouraging, but it is stated that there seems to be a feeling amongst sellers to hold for rates more on a par with replacement prices, and should importers keep in this mood some improvement will, probably, eventuate; but in reviewing the state of our own market, in combination with that of the principal foreign markets, we are forced to come to the conclusion that for some time to come it is useless to anticipate any improvement of a material character, and it is even doubtful whether any change to speak of will take place much before the autumn.

LEAD.—The market has receded 15s. to 7s. 6d. per ton, and good soft English pig being now obtainable at 20s. 15s. to 20s. 17s. 6d. The total exports from the United Kingdom for the first three months of the year compare well with the two previous years, there being 9068 tons against 8832 tons in 1876, and 14902 tons in 1875.

STEEL.—The demand considerably increases for steel rails, but the prices at which recent contracts have been taken are low, 6½, 9s. having been accepted, if not lower. There are buyers now in the market for several thousand tons. The demand is also better in France, and last year they exceeded the previous year's make by 10,000 tons.

QUICKSILVER.—The price has again declined to 7½, not withstanding the quantity exported is much larger than last year and 1875. From January to March 31 there was exported 1,847,483 lbs.; in 1876, 1,251,682 lbs.; and in 1875, 1,104,522 lbs. The reduced price has probably been the means of stimulating the demand. The advices from New York state that the market there is dull and nominal at 48 c. gold. The San Francisco market is slightly firmer, quoted at 41 c., but 1400 flasks were sold previous to the mail leaving on the 22nd ult. at 42½ c., settling down to 41 c.

TIN-PLATES.—The demand is unimproved, and several of the works have reduced their make. Quotations are still low, but concessions upon current prices have to be made for quantities.

TIN.—The tendency of the market is decidedly downward, and unless supplies diminish it is impossible to uphold the market. The firmness of holders has hitherto sustained the market, but when once this breaks down the price will rapidly decline. There is not only general dullness prevailing in all branches of trade, which considerably reduces the wants for ordinary purposes, but the tin-plate trade is particularly dull, and the stock of tin continues to increase. Independent of commercial distress, there is the depreciating effect which war would, probably, have upon the value of produce; and, added to this, in the event of war dearer money may be reckoned upon as a certainty. The market has been very dull all the week, and prices declining, and they close at their worst, Straits offering freely at 69½, 15s., but no buyers at this figure. Australian tin is also affected, and quoted nominally 68s. Advices from Hong Kong on the 10th state Banca to be selling at 42½ c. and Billiton at 42 c. The Board of Trade Returns show a decline in the exports during the last quarter. This year there was only 22,465 cwt., against 24,126 cwt. last year, and 27,447 cwt. in 1875. The New York market is in the same apathetic state as our own, and assumes a declining tendency; but, strange to say, the advices from Penang are higher, and shipments continue to be made to Europe and America in the face of a positive loss, and no prospect of an ultimate profit. The advance in price, however, is owing more to rioting in the mining districts than to any other cause, and supplies were partly stopped.

THE IRON TRADE.—(Griffiths's Weekly Report).—Friday Evening.—The Glasgow market has been steady to-day, with only a moderate business doing; it closed with buyers of g.m.b. warrants at 53s. 8d., sellers asking 53s. 10d. This is all the business done, and our quotations last Friday of 53s. 8d. We quote makers: No. 1, iron, Gartsherrie, 61s. 6d.; Coltness, 55s.; Calder, 54s.; Langloan, 52s.; Summerlee, 59s. 6d.; Monkland, 55s. 6d.; Fob. Glasgow, Glenbrook, 59s. 6d.; Eglington, 55s.; Fob. Ardrossan; Shotts, 61s.; Fob. Leith; Kilmid, 56s. 6d.; Fob. Bussell. The principal Quarterly day of the Black Country was held in the Birmingham Exchange yesterday. The meeting was not as large as usual, but the principals of the great firms in Staffordshire, Shropshire, the West Coast, Northamptonshire, and Derbyshire were all present. It was known previously by those who attended the meeting that no change could take place in the price of iron. We have repeatedly stated this circumstance in all the previous reports. The London merchants attended as usual. Most of the leading firms were represented. Mr. Abraham Darby, agent of the Colbrookdale, was in Birmingham. Mr. Robert Heath, M.P.; Mr. J. T. Smith, of Barrow; Mr. Massie, of Milham; Thomas Whitwell, of Stockton; Mr. Charles Fourcres, the executive Government engineer of irrigation in India, and numerous other distinguished persons in the trade attended the meeting, including Mr. Fisher Smith, T. Horton, J. Lloyd, Gregory Norris, Joseph Robinson, Mr. Chas. James Bird, Mr. Cairne, Mr. Keese, Mr. Parsons, Mr. Swan, Mr. McNiel, and others from various districts.

The manufacturers of tin-plates were fully represented, and, in face of the fairly depressed state of this branch of the trade, the tin-plate makers were generally cheerful, although their trade was never so bad as it is now, for cokes are actually 2s. and charcoal 3s. per box less than they were ever known to be. There was very little business done at this Quarterly-day. This created no surprise, for no one appeared to expect business. The makers of hematite pigs did not press sales, and late prices, where business was actually done, was submitted to by buyers. On the whole, very little business was done in this class. The general feeling appeared to be that hematite could not, and would not, go lower, it being known that there are no stocks held on the West Coast, except by one smelting firm, who will not sell another pig until the market will give them remunerative prices, good hematite mine being scarce and firm in price in the West Coast district.

The sales of Staffordshire pig iron may be reported as; the contracts taken by each manufacturer were only for one or two boat loads. The great producing firm of best pig-iron—the Lillieslade Company, in Shropshire—invariably make large sales at this meeting. We are, however, on this occasion unable to state the amount of their sales. The business done in Northamptonshire, Frodingham, Derbyshire, South Wales, and Middlesbrough was not one third the usual amount, and the manu acturing trade was said to be inactive as in the raw material. We observed no vigour in any department of the market except sheet iron for galvanising purposes and nail rods, and this presented no volume of demand to counteract the general stagnation which so unapplied at this moment pervades every department of the iron trade.

In the bar depot the orders given to the leading houses by the Thames-street merchants here are not so large as usual, and the same remark applies to the orders of the London and Bristol merchants. In boiler plates the scarcity of orders lately witnessed was developed in the transactions of buyers at this Quarterly-day, and the local engineers and hardware manufacturers of the Black Country manifested no desire to buy large parcels of iron, and the same feeling was reciprocated by the ironmasters, who evinced extraordinary apathy to new business. In fact, if viewed from a business point of view, this Quarterly-day was the most inactive that ever was attended. Perhaps the very unsatisfactory condition of the tin-plate trade ministered to the disheartening condition of the iron market at this Quarterly-day.

MESSRS. FRAY, JAMES, AND CO.—COPPER: An enquiry, comparatively active, prevailed at the beginning of the month, and a good deal of all kinds found buyers at improving rates, but the changed aspect of Eastern affairs, combined with the approach of the monthly auctions, has caused a relapse in the last few days. The sales by auction announced for Tuesday next, the 17th inst., are 400 tons Wallaroo and 200 tons Burra. Burra is without any change of note.—TIN has been uninterrupted heavy, and still lower prices are prevailing.—LEAD, after having held a steady course for some time, has again become easier to buy.—SPELTER is in small demand, with prices in buyers' favour.—TIN-PLATES unchanged.

MESSRS. PIXLEY AND ABELL.—GOLD.—There have been no arrivals of gold during the week. The demand for bars and coin for export has, for the present, ceased; and 10,000 of a part of a stock held here, has been sent into the Bank.—SILVER.—The Banks of Bengal and Bombay have raised their rates for discount; the exchanges came higher from India, and the Indian Council drafts were all allotted yesterday at an advance of 1½, from the previous week; silver has consequently improved in value, and a gradual and steady rise from 58½ to 59½, our last week's quotation, to 59½, the price of to-day, has taken place. The arrivals have been

11,920, from India, 5000, from New York, and about 70,000, from Germany. The Peninsular and Oriental steamer takes 87,000, to Bombay.—MEXICO DOLLARS—owing to limited arrivals, have improved in value, the last price being 54d. per oz.

TIN-PLATES.—Messrs. BROOKER, DORE, and CO.—The trade continues in a very depressed state, but the subjoined returns below show a slight increase in quantities shipped:—During the three months ending March 31, 1876, the shipments were 30,960 tons, of the value of 712,784, whilst in the corresponding period of the present year the quantity was 34,317 tons, of the value of 702,940. In all other metals the alterations in value had been but trivial.

The market for all kinds of stock were very much depressed during the early part of the week, and the MINING SHARE MARKET has participated in the general dullness, but towards the close things look a little brighter, and a few mines have been enquired for.

Those chiefly dealt in have been Great Laxey, Rookhope, Van, East Van, North Laxey, Roman Gravel, Tankerville, Grenville, Leadhill, Glenroy, and a few others.

TIN MINES show no change. Dolcoath, 34 to 36; at the three-monthly meeting on Monday the accounts showed a profit of 100%, and a dividend of 5s. per share was made. The costs to March 31 were 10,992. Tin sold, 293 tons, 12,693. The agent reported that the mine was looking well. The shaft is now down 338 fms., and in the bottom worth 80s. per fathom for tin. This is, we believe, the deepest point yet reached by any mine. The 338 level east is worth 50s. per fathom; 338 west 60s. per fathom. The south lode intersected in a cross-cut from the 302 is worth 28s. per fathom for the distance explored.

At Wheel Basset quarterly meeting the accounts showed a loss of 2118, and a debit balance of 8690. A call of 2s. (1024d.) per share was made. The costs in July were 3468; returns of copper ore, 1073; tin, 238. The agents report that extra work to the extent of 100% is included in the costs and are pleased to state that they consider they have arrived at the time when calls will not be required for the further development of the mine. Curra Brea, 34 to 36; Cook's Kitchen, 3 to 3½; South Curra Brea, 3 to 3½; East Pool, 10 to 11; South Condurrow, 7 to 7½; South Frances, 3 to 4; Tancoat, 10 to 12; West Frances, 4 to 4½; Wheel Grenville, 14 to 15; Wheel Kitty (St. Agnes), 2 to 2½; Wheel Peewee, 2½ to 3; Wheel Uny, 1½ to 1¾.

COPPER MINES are very quiet. Devon Great Consols, 30 to 40; no particular change here, and the points in operation are worth the aggregate 175s. per fathom. Bedford United, 10s. to 15s.; Cathedral, 20s. to 30s.; Hingston Down, 10s. to 15s.; Parys Mountain, 7s. 6d. to 8s. 6d.; Penruthal, 10s. to 12s. 6d.; Prince of Wales, 2s. 6d. to 5s.; South Coradon, 120 to 130; West St. John, 30 to 35; West Tolgoe, 60 to 62½; Wheel Crebor, 2½ to 3; East Coradon, 12s. 6d. to 17s. 6d.; the accounts for three months ending February showed a credit balance of 202. The copper ore realised 168s.

LEAD MINES show no material change, though there is more business doing in them than in any others. Minera, 10 to 12; the directors have declared a dividend of 4s. per 5s. share, free of income tax, out of the profits of the 16 weeks' working to March 24, and is payable on May 11. Roman Gravel, 12½ to 13; the 10 south is worth 2 tons of lead ore per fathom. The sampling for the month is 220 tons of lead ore. Tankerville, 8½ to 9; the sampling here for the month is 100 tons of lead. West Tankerville, 13 to 14; the lode in the 75 end south is worth 15s. per fathom. The 55 tons of lead ore sold this week realised 464, 12s. 6d. Rookhope shares have been in fair demand at 19s. to 21s.

Great Laxey, 21 to 22. North Laxey, 15s. to 17s. 6d.; at the meeting (full particulars of which will be found in another column) the accounts showed a balance of assets over liabilities amounting to 3292, 19s. 11d. The statement from March, 1876, to March, 1877, shows sales of lead ore, 120 tons, 1889, 15s.; the costs for the same period, 3940, 8s. 4d. The next sales of lead, we understand, will be 50 tons for the quarter, estimated at 800s., against a cost of 900s. to 1000s. Glenroy, 14 to 15; a telegram (April 12) states that the mine has improved, making blende and copper; and the agent never saw it looking so well before. The 65 stope south making stronger blende, and not yet through the lode. Other stopes and cross-cuts without change.

Van, 35 to 37, ex. div. East Van has been very flat at 6 to 6½. Van Consols, 2 to 2½; Glyn, 1½ to 2; Bodidris, 1 to 1½; Aberdaun, 4 to 5; Asheton, 1½ to 2; Ladywell, 1 to 1½; Leadhills, 6½ to 7; Pennerley, 10s. to 12s.; Plymington, 9s. to 11s.; Llanrwst, 2 to 2½; Gorsedd and Merilyn, 4½ to 5½. Combarnet, 4½ to 5; there is a lode in the end below the 28 2½ ft. wide, and worth 4 tons of rich silver-lead per fathom. The mine is opening out well. Clementina, 30 to 40; D'Eresby, 20 to 25; St. Patrick, 1½ to 1¾; Trebeigh Consols, 8s. to 10s.; West Asheton, 3 to 4; West Chiverton are flat at 16 to 17. West Craven Moor, 12 to 13; Grogwinion, 3½ to 4½; Red Rock, 14 to 24; South Cwmystwyth, 2½ to 3½; New Cwmystwyth, 2 to 3; St. Harmon, 3 to 3½; Wye Valley, 3 to 4; West Wye Valley, 2 to 3; West Goginan, 3 to 4; Pateley Bridge,

received by the Pacific mail steamer this week, and a further shipment has been advised, so that regular fortnightly shipments would appear to be coming forward.

Panulillo, 14 to 15; the directors have issued the statement of accounts for the half-year ending December, the result of which will be included in the yearly accounts at the November meeting. The net profit for the first half of the current financial year was \$332,115, 11d., which is considered satisfactory. It is slightly below the estimate which was given in February, owing to the unfavourable exchange. During the half-year ending December 2754 tons of regulus, containing 1275 tons of copper, were produced at Panulillo, and the price realised was \$16 per quintal metrico, against \$15 83 in the previous six months. The report of Mr. F. G. Welch gives a review of operations for the half-year ending December, and shows the quantity of new ground opened up to that date, and condition of the same to present date. The various causes of the less production and greater costs are explained. For the ensuing half-year Mr. Welch anticipated a monthly production of about 40,000 quintals metrico, at 5 1/2 to 6 per cent.; but should two or three stopes, now bearing fine courses of ore, continue to hold out the above produce may be exceeded by 1 or 2 per cent. The production for January amounts to 30,000 quintals metrico, at 5 1/2 per cent. Only very slow progress can be made in developing the Panulillo lode in depth. With very few exceptions the parts of the lode are terribly hard for sinking and driving, and a lot of work is done through 4 metres per month is exceptionally good work. Sinking by English miners in the Comuna wet shaft offers the least delay possible. Therefore, looking at the improvement of the lode at that point, and good prospects in the Mina Vieja, he suggests that the use of boring-machines in these mines be carefully considered. The premature adoption of an imperfect machine would be a mistake, but judging from the reports in the home and foreign journals there would seem to be a certain degree of perfection reached in some of the machines, and he suggests that costs of plant, &c., should be ascertained, and the matter laid before the board.

Richmond, 5 1/2 to 6; the usual weekly telegram gives the "Week's" run at \$33,000. The refinery this week has produced doré bars to the value of \$30,000. No report from the manager has arrived this week. The run this week was, it is stated from two furnaces, and that these should be kept going at this period of the year, when it is usual to shut all down, speaks well for the resources of the mine.

The Richmond Company have, it appears, secured the services of Clarence King, Mr. Hague, of San Francisco, and Professor Price, as witnesses in the injunction suit about to be tried. The right of three such eminent men, whose skill as mining engineers is so well known, not only throughout America but almost equally so in this country, is, it is thought, a fair trial. Mr. King can point to the present deposit of the great Richmond lode as a triumphant proof of the soundness of his views as expressed in the trial in 1873. To establish the fact that the Richmond lode is a true fissure vein in limestone, a fact of which the evidence is so abundant and overwhelming, is virtually to defeat the contention of the Europa Company, whose case is now said to rest on the assertion that the Richmond is a contact vein, this being the last shift in their base of attack. The Europa people are now very much at sea with the Europa Consolidated Company, attributing to them the gloomy prospects of the mining interests of the locality. Rumours of the various trades in the town are in consequence not so much paralysed. This state of things is all the more mortifying as the discovery of fine ore, very rich in lead, was the one theory so long waited for to bring the existing masses of ferruginous ore into sources of high profit. The Europa Company runs night and day from the bonanza they struck in the ground lately by the Richmond, and are reported to have taken out an valued \$200,000, ere they are to be stopped by injunction.

Serra Buttes, 1 1/2 to 2; Plumas Eureka, 2 1/2 to 3; the result of the working at the Sierra Buttes and Plumas Eureka Mines for March is reported to be—Serra Buttes Mine: Receipts, \$33,414; total California expenses including cost of mining and milling, \$20,222—Plumas Eureka Mine: Receipts (including sulphurets), \$43,212; total California expenses, including cost of mining and milling, \$18,570.

Exchequer, 1 1/2 to 2; the first clean-up is expected to be announced early in May, as according to the last advices the furnace was in full blast, and everything appeared to be working satisfactorily. Mr. Smith, who worked the O'Hara furnace at Peavine with such successful results, has now complete charge of the Exchequer mill and furnace. I. X. L., 2 to 1 1/2; the Ophir lode promises not only a supply of good ore, but its explorations will drain the other portions of ground when the drifts are carried further south. Advices are daily expected from the manager that O'Hara is building the furnace.

The market for Hydraulic, or Gold Washing Shares, has not exhibited much change. There are a few transactions taking place, and with a more settled feeling in foreign matters a good business may be expected in this description of security. The latest advices are to March 30, at which date considerable rain had fallen, and still continued to fall, in California. Blue Tent, 3 to 3 1/2; the latest despatches mention that there was a daily supply of about 2000 in. of free water flowing through the company's ditch; and this, with a supplemental supply from the South Yuba Tunnel, was being used to good effect in the South Yuba and Enterprise claims. From the weekly report it would appear that the actual washing time, from the clearing up of \$20,250 announced by telegram, was about 23 days full time (24 hours each), thus showing a daily yield of nearly \$900. Birdseye Creek, 3 to 4; a telegram received on Thursday announces the result of washing for March—a gross return of \$7250, and a profit of \$2250. This is considerably in advance of the last return, and the claim will, no doubt, yield well this season if sufficient water is available for prosecuting the work vigorously. Cedar Creek, 3 to 4; the advices in another column show that the agent was steadily washing with all the water at his command, and was rapidly getting the Baker claim in a position to work to good advantage. The prospects here would appear to be much more encouraging. Oregon (pref.), 4 to 4 1/2; the last advices from the agent state that he had plenty of water, and was washing with all energy.

Lead Mines have remained without special feature. The transactions have been few, but quotations do not point to lower prices. Van, 35 to 37; no change reported worthy of note. The 105 is progressing well and looking promising; present drainage by the side of the lode, Pennerley, 2 to 3; the 130 east continues to show a strong promising lode, 3 ft. wide, containing good stones of lead. Other points without alteration. Pateley Bridge, 2 to 2 1/2; in the 30 east, on rake vein, the end has just reached the first bed, which has been very productive in the 20, and the agent anticipates similar good results at present depth. The operations on Lamb vein are delayed somewhat by the great rush of water. No change elsewhere.

Subjoined are the closing quotations:—
Avalanche, 1 1/2 to 2 1/2; Carn Brea, 3 1/2 to 3 3/4; Devon Great Consols, 3 1/2 to 4; Delamater, 2 1/2 to 3; East Van, 3 1/2 to 4; Glyn, 1 1/2 to 2; Great Laxey, 2 1/2 to 3; Great West Van, 3 1/2 to 4; Hingham Down Consols, 1 1/2 to 2; Leadhill, 2 1/2 to 3; Marke Valley, 1 1/2 to 2; Pateley Mountain, 1 1/2 to 2; Pateley Bridge, 2 to 2 1/2; Pennerley, 2 to 3; Penrithall, 1 1/2 to 2; Roman Consols, 1 1/2 to 2; Tankerville, 1 1/2 to 2; Tincroft, 1 1/2 to 2; Van, 35 to 37; Van Consols, 2 1/2 to 3; West Asherton, 1 1/2 to 2; West Basset, 3 to 4; West Clifton, 1 1/2 to 2; West Tankerville, 1 1/2 to 2; Wheel Crest, 2 1/2 to 3; Wheel Gravelly, 1 1/2 to 2; Almaden and Tinto, 5 to 6; 10th to 12th; Argentine, 4 1/2 to 5; Birdseye Creek, 3 to 4; Blue Tent, 3 to 3 1/2; Cape Copper, 40 to 42; Cedar Creek, 3 to 4; Chontales, 1 1/2 to 2; Colorado Terrible, 1 1/2 to 2; Don Pedro, 1 1/2 to 2; Eberhard, 1 1/2 to 2; Elmer, 1 1/2 to 2; Ennema, 1 1/2 to 2; Exchequer, 1 1/2 to 2; I. X. L., 2 to 2 1/2; Javal, 1 1/2 to 2; Kapanga, 2 1/2 to 3; Last Chance, 1 1/2 to 2; Malpas, 1 1/2 to 2; Malabar, 1 1/2 to 2; New Pacific, 1 1/2 to 2; New Quebrada, 4 1/2 to 5; Pestarena, 1 1/2 to 2; Plumas Eureka, 2 1/2 to 3; Rio, 1 1/2 to 2; Richmond Consolidated, 5 1/2 to 6; St. John del Rey, 250 to 260; San Pedro, 5 1/2 to 6; Sierra Buttes, 1 1/2 to 2; South Aurora, 1 1/2 to 2; Teosma, 1 1/2 to 2; United Mexican, 2 to 2 1/2.

COLLIERIES.—The depressed and panic-stricken condition of the general share markets is, of course, to some extent reflected by colliery shares, which on this account alone close flatter than last week. But it will be readily admitted that, whether the present situation of Eastern affairs leads to war or to less probable peace, any definite conclusion of the suspense which has now been so long endured is likely to have a favourable effect on trade, and no branches of trade will sooner or more decidedly show this effect than those in coal and iron. We do not conceal from ourselves that these are, and have been for some time, in a bad way, but they are certainly better than they have been; and, while war would create an increased demand for fuel and metal, peace would lead to more vigour in general manufacture. Many signs of distinct improvement in the iron prospects are already apparent, and foreign orders are now coming in from quarters from which previously have told us the English iron trade had been driven out. Besides these hopes of late week, and especially the order from America for hoop iron, we hear of further good orders—one for 20,000 tons—which are sufficient to prove that England has not lost her leading position in the iron trade.

Nothing affects our coal trade more decidedly than the state of the iron market,

and there is, therefore, good ground for anticipating an improvement in the price of coal. Slack is already looking up, owing to the commencement of the brick-making season, and steam coal is firm in most markets. House coal is steady, but shows very little signs of any early improvement. Llay Hall shares are at 9 1/2 to 10; it is expected that the pits will now produce an output of from 60 to 100 tons, to be gradually increased as the levels are extended. We hear that Chapel House continues to do a good trade, and is plentifully supplied with orders, in some cases realising better prices. The sinking of the 15 ft. shaft is being carried on very rapidly, and no time will be lost in the necessary opening out of the Park Mine. The shares are 2 1/2 to 3 1/2. Allam's shares are quoted 1 1/2 to 2 1/2; the new coal is looking well. The following are the closing prices (the depreciation, where it appears, arising from nothing specially affecting the respective shares, but from the depression, referred to above, in all the share markets).—New Sharlston, 3 1/2 to 4; Cakemore, 2 1/2 to 3; Cardiff and Swansea, 1 1/2 to 2 1/2; Bilson and Crump, 4 1/2 to 5 1/2; Thorps Gawber, 1 1/2 to 2; Cannock and Huntington, 2; Hamstead, 10; Sandwell Park, 20 1/2.

COMBIMARTIN.—Upwards of 4000 shares out of the 6000 into which this mine is divided are held in its locality, and the way in which it is opening out is being watched with great interest and satisfaction in Exeter and elsewhere. Prior to the formation of the east-book company the local proprietors had expended a sum equal to about 7s. each on the present shares; and after making a clean book a call of 1s. per share was made, of which there is still a balance in hand, and it is hoped another 1s. may make a good paying mine. Local parties have been buying lately, and are looking for a high price for the shares in a few months. There is an office of reference in London, where reports are sent weekly. In a former working Combimartin produced 60,000 lb. worth of rich silver-lead, some of it producing 1200 ozs. of silver per ton, and the average was 62 ozs. The main lode was then heaved by a cross-course into undeveloped ground. A parallel lode also yielded great riches to the 25 fm. level; and the object of the present company has been to clear the shaft to work this and the main lode also in new dry ground. So far everything is equal to expectation.

WEST SETON.—This mine continues to have good sales of copper ores, and seems likely to increase them as the bottom part of the mine is opened up. At the Ticketing held at Redruth last week the parcel of 302 tons (one month's produce) realised 1439l. 14s. The tin returns have also increased by 5 tons per week, and a very valuable piece of ground for tin has been discovered in the eastern part of the mine. The 150 still improves, and the agents are very sanguine in their expectations of meeting with valuable discoveries of copper the further they go west.

BRITISH ENTERPRISE IN FIJI.—An attractive little island—Naitaba—in the Fiji group, now annexed to the British crown, is being offered for sale by private contract by Messrs. Bell, Crowder, and Greenfield. The island is from 3000 to 4000 acres in extent, is approached from Loma Loma, the second principal town of Fiji, by a sheltered roadstead. The soil is described as of a rich banany character, suitable for the growth of sugar, coffee, or tobacco; and there are hills, which render it better adapted for cultivation than other islands in the same group, where enterprise is checked by the ravages of hurricanes. There is considered to be little doubt that where land can be bought for even the maximum price usual in unsettled countries—say, 1l. to 2l. per acre—there is in Fiji a fair field for profitable enterprise.

DEED.—On April 3, aged 69, much regretted, Mr. W. EDMOND, of the Mines Royal Copper Works, Neath. He was a most able smelter, an old correspondent of the Mining Journal, and highly respected by all who knew him.

V A N L E A D M I N E .—Particulars of this very valuable Mine will be found in the SIXTH EDITION of Mr. MURCHISON'S WORK ON BRITISH LEAD MINES, published THIS DAY, with Maps, &c., price 2s. 6d. The Prefaces to the Six Editions price 1s. 8, AUSTINFRIARS, LONDON.

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"Contains a good deal of information that may be useful at present. Mr. Murchison's theory is briefly that on the average British Lead Mines have less of the better element in them than any others, and the figures he gives seem to support that view; at all events, those interested in this industry will find his facts and observations well reading."—Times.
"Calculated to be a great benefit to investors."—Mining Journal.
"We have great pleasure in recommending his treatise."—Morning Post.
"We invite capitalists to look into this means of investment."—Money Market Review.

MR. W. MARLBOROUGH, STOCK AND SHARE DEALER, 29, BISHOPSGATE STREET, LONDON, E.C. (Established 20 Years), sell the following SHARES, at prices annexed:—

15 Altani, 65.	15 Gorse & Mer., 45.	5 Pennant, 65 1/2.
70 Almaden, 7s.	10 Grosvenor, 44 1/2.	30 Pennerley, 12s. 9d.
20 Argentine, 44 1/2.	50 Glyn, 41 1/2.	ex div.
50 Birdseye Creek, 16s. 3d.	40 Glenroy, 41 1/2.	50 Port Phillip, 10s. 6d.
60 Chontales, 7s.	25 Gold Run, 10s.	20 Penrhall, 41.
25 Colorado, 11s. 9d.	75 Great West Van, 6s. 6d.	25 Pandora.
20 Condes de Chili, 44 1/2.	20 Hingham, 13s. 3d.	40 Parys Mount, 8s. 9d.
10 Decent, 45.	20 I. X. L., 22s. 6d.	30 Penrithall, 10s. 6d.
20 Eberhard, 48 1/2.	10 Leadhill, 48 1/2.	30 Rookhope, 20s.
20 Exchequer, 40s.	2 Lishorne, 48 1/2.	20 Richmond, 45 1/2.
25 East Caradon, 18s.	1 Minera, 48 1/2.	75 South Aurora, 6s. 9d.
40 Frontino, 42.	40 Marke Valley, 19s.	40 Van Consols, 42 1/2.
40 Flagstaff, 42 1/2.	100 Malabar, 6s.	20 Wye Valley, 44 1/2.
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40 Birdseye, 16s. 3d.	5 Great Laxey, 41.	50 Parys Mount, 8s. 9d.
50 Bodirris, 22s. 6d.	30 Glyn, 41 1/2.	50 Penrithall, 11s.
30 Chapel House, 43 1/2.	20 Glenroy, 41 1/2.	10 Roman Gravels, 41 1/2.
20 Colorado, 11s. 9d.	40 I. X. L., 22s. 6d.	20 Richmond.
15 Devon Gt. Cons., 44.	15 Leadhill, 48 1/2.	10 S. Condurow, 47 1/2.
50 Exchequer, 41 1/2.	40 Marke Valley, 17s. 6d.	20 Santa Barbara, 41 1/2.
50 Cedar Creek, 11s. 9d.	30 North Laxey, 17s.	10 Van, 43s.
20 Devon Consols, 42.	20 New Quebrada, 44 1/2.	50 Van Consols, 42 1/2.
25 Eberhard, 48 1/2.		

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MESSRS. JAMES AND SHAKESPEARE beg to give notice that their NEXT SALE will take place on TUESDAY, the 17th instant, at Two P.M., at the BALTIC SALE ROOM, SOUTH SEA HOUSE, THREADNEEDLE STREET, when they will offer THREE HUNDRED AND EIGHTY SIX TONS IN CAKES, and TWENTY TONS IN INGOTS.

Catalogues may be obtained at their offices, 10, Austinfriars, E.C., London; and 3, Peter-street, Liverpool; also of Mr. D. DOCKER, 38, Cannon-street, Birmingham.

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LEAD ORES.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
March 21	Tan-y-Bwlch	50	£14 5 0	Nevill, Druce, and Co.
23	Powell Consol.	20	13 10 0	ditto
24	New Llangnog	20	13 9 0	ditto
April 4	Great Laxey	50	22 15 6	Weston, Son, and Co.
—	—	25	22 15 6	Trefry's Estate.
6	Melindur	5 19 3	13 1 0	Nevill, Druce, and Co.
11	Great Dyliffe	60	13 15 0	Panther Lead Company.
12	Talargoch	—	—	—
—	Maes-y-wyddu	75	14 3 6	Adam Eyton.
—	Coetia Llys	40	14 6 6	Walker, Parker, and Co.
—	Gorsedd & Merlyn	50	14 10 6	ditto
—	Prince Patrick	20	13 10 6	ditto
—	Rhyd Alun	5	13 3 6	Adam Eyton.
—	Old Trebarnget	25	24 5 0	Steddon, Bush, and Co.
—	—	25	15 15 6	Trefry's Estate.
13	West Tankerville	35	13 5 6	Walker, Parker, and Co.
—	Rookhope	30	12 18 6	J. Dinning.

BLENDE.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
April 11	Talargoch	200	£4 7 6	Bagillt Smelting Co.

TO COLLIERY PROPRIETORS. TENDERS FOR GAS COALS.

THE DIRECTORS OF THE SHREWSBURY GAS-LIGHT COMPANY ARE PREPARED TO RECEIVE TENDERS FOR THE SUPPLY OF THE BEST DESCRIPTION OF GAS COALS AND CANNEL, for a period of one, two, or three years, commencing July 1st, 1877. Such coals to be as free as possible from sulphur, bats, blud, refuse, and dirt, and shall be weighed upon the company's machine (240 lbs. to the ton), and delivered free, by and at the expense of the contractor, at the London and North-Western or Great Western Goods Station, Shrewsbury.

Tenders, specifying the coals and the pits at which they are to be raised, must be delivered on or before the 24th day of April next.

The lowest or any tender will not of necessity be accepted.

S. B. DARWIN, Secretary.

Notices to Correspondents.

*. Minor inconvenience having arisen in consequence of several of the Numbers of the past year being out of print, we recommend that the Journal should be filed on receipt; it then forms an accumulating useful work of reference.

WEST GODOLPHIN.—Being a shareholder in this mine I have received a statement of accounts and report, and, had it not been for the purchasing of a large engine, I presume a dividend would have been paid. It is, however, satisfactory to find that even at the low price of tin they have a credit balance of 923*l*. As the output has considerably increased it will be much more so when the new and more powerful engine is got to work.—A SHAREHOLDER: *Belfast, April 9.*

PURCHASE OF SHARES.—"O. P. Q." (Coolrain).—Any respectable broker would complete the purchase of shares for you within 21 days. Your best course will be to write and demand the transfers, and if not received by return of post put the matter in the hands of your solicitor.

WHEAL WHISPER.—In answer to your correspondent, "Inquirer," he will, if a shareholder, in a few days receive a notice calling a meeting, and in the meantime it may be satisfactory to him to know that the mine pays its cost even at the present low price of tin.—THE SECRETARY: *Finsbury Circus.*

Received.—"B. H."—"J. H. J."—"A. Puzell Correspondent."—"J. C. J."—"R. S."—"A. Vassall."—"Shareholder."—"Bristol."—"Shareholder." (Cambridge).—"M. T."—"B. G. S."—"Reader" (Edinburgh). We have not space for such matters—"Shareholder" (Dutlin). Next week—"E. S."

IMPORTANT NOTICE.—REDUCTION OF POSTAGE ON THE "MINING JOURNAL."—In consequence of the new POSTAL CONVENTION, which came into operation on July 1, the postage of the *Mining Journal* to many countries will be reduced to one fourth. Henceforth the subscription will be 1*l*. 10*s*. 4*d*. per annum (39*frs.*), postage included, for the following countries. The amount will, if desired, be collected at the subscriber's residence at the end of each year. The subscription continues until countermanded:—Austria, France, Belgium, Denmark (including Iceland and the Faroe Islands), Egypt, Germany, Gibraltar, Greece, Heligoland, Italy, Luxembourg, Netherlands, Norway, Portugal (including Madeira and the Azores), Roumania, Russia, Serbia, Sweden, Switzerland, United States, Malta, Turkey, Morocco, Tunis, and the Canary Islands. Spain 1*l*. 19*s*. (50 *frs.*)

THE MINING JOURNAL.

Railway and Commercial Gazette.

LONDON, APRIL 14, 1877.

COAL AND IRON PROSPECTS.

Now that we have got through the first quarter of 1877 the time appears opportune for glancing at the state of our coal and iron trades during that period, and in endeavouring to look forward to what it is likely to be. During the past three months there has been a marked increase in our coal-producing power owing to the opening out and developing of several extensive collieries, but the consumption, on the other hand, has fallen off, and with the approach of summer we certainly cannot see how there can be other than a still further decline in the demand for house coal in particular. Steam coal, however, may be more active, but will scarcely counterbalance the loss on the other description. So far as England is concerned, we have been told by Royal Commissioners that the consumption of coal will augment with the increase of our population; but this has not been the case, as can be easily proved. If we take London, we find that up to the end of March City dues were paid on 139,946 tons less than in the same period of 1876, although the price was not less than last year, but as low as in 1870 and 1871. The falling off, therefore, cannot be ascribed to the high charges and large profits of merchants and colliery owners, whatever may have been the state of trade at home. Hitherto we have been able to point to the large yearly increase of our exports of coal, not only to some of our vast possessions, but to all parts of Europe as well. But in the last quarter our exports of coal and fuel generally were only 2,950,636 tons, against 3,163,400 tons for the corresponding quarter of 1876. This, too, was not caused by high prices, for we find that the average export prices for the first three months of 1876 was 12*s*. 3*d*. per ton, whilst for the same months of the present year it was only 10*s*. 5*d*. per ton. But the fact is we have now to contend with a great deal more competition on the part of German and other colliery owners on the Continent than at any time previously. This is one of the reasons why the price has been so low, for our coal owners, for the purpose of holding the markets they have so long had nearly in their own hands, have sold the produce of their mines at rates which have left them no profit whatever. Yet we are told that England has nothing to fear from foreign competition, and that in coal and iron we can hold our own against all the world. We may have done so, but it by no means follows that we shall always be in a position to do the same. High wages and large profits have not at all improved our position abroad, but have led foreign consumers of coal and iron to look to their own natural resources, and this of late they have done to an extent that few are actually aware of.

If we look to the iron trade there is nothing very assuring with respect to it either at home or abroad. In pig iron, in the North of England we find that stocks are increasing, and prices are so low that the ironmasters in the Cleveland district have just given their men notice of a 10 per cent. reduction in their wages. Turning to manufactured iron, we find that in the North, where there are so many rail mills, the quantity sold in the first quarter of 1876 was 38,237 tons, at an average price of 6*l*. 14*s*. 5*d*. per ton, against 7232 for the first quarter of 1877, the price being 6*l*. 2*s*. 7*d*. per ton. In bars the price has declined from 7*l*. 13*s*. 9*d*. to 6*l*. 19*s*. 1*d*. and plates 7*l*. 14*s*. 1*d*. to 7*l*. 2*s*. 3*d*. per ton. This state of things speaks for itself, and requires no comment, for it shows how utterly prostrate are the most important branches of the iron trade, and will be a sufficient answer to those who think there should be no reduction in wages. But, going a little further, we find there has been a decrease in the value of our exports of wrought and other iron during the last three months of 306,448*l*. At the present time, too, in all our ironmaking districts we find many furnaces out of blast, mills standing, and most other branches only partially employed. Russia, it may be stated, has long been one of our very best customers for every description of railway stock, but it is evident she does not intend to be so any longer, for, from the decree issued by the EMPEROR on Jan. 28, and just made known, it is ordained—(1) "That no further orders for the Government for railway rolling stock shall be given for the future;" (2) the statutes of newly-projected railway companies shall contain provisions binding them to purchase in Russia the whole of their goods wagons, rolling stock, passenger carriages, and locomotives." Premiums are to be given for locomotives only as shall have been constructed exclusively of parts made in Russian rolling stock works. It is evident from this order that Russia intends to become independent of us, so far as regards railway material at least, but we also know that coal mines on a large scale are opened out there, and that coal-cutting machines are in operation in them. In all likelihood in that vast country, with its immense coal field, premiums will also be held out for the developing of the minerals to the prejudice of our English colliery owners.

Looking, then, at the state of affairs at home and abroad, we cannot believe we shall see any likelihood of an improvement in the coal trade, but we expect to see a good many more collieries being wound up in liquidation—a process now going on every day—prices low, and work partial. This is a view we believe to be a correct one, and is entertained by many of those who have large interests at stake in connection with our coal mines. No doubt there will be a

revival in some branches of the iron trade, but not to such an extent as to materially increase prices or raise wages, and this we believe is only a fair inference from the facts and figures we have given above.

OUR RAILWAY IRON ABROAD.

It is rather satisfactory to note that the exports of railway iron from the United Kingdom at last present some signs of improvement. Thus, they amounted in March to 30,078 tons, against 21,939 tons in March, 1876, and 31,369 tons in March, 1875. The exports have been as follows month by month during the first three months of the last three years:

Month.	1875.	1876.	1877.
January Tons	26,171	23,580	17,016
February	25,086	18,099	20,690
March	31,369	21,939	30,078

Total 102,626 63,618 67,784

The increase which has taken place this year is certainly not of much importance, but still it is an increase, and that is something. Notwithstanding the rigidly Protectionist policy attempted to be enforced by the Russian Government, our rails appear to have been in increased request this year in the Czar's great empire. Thus we sent the Russians 7516 tons of rails to March 31 this year, as compared with 1038 tons in the corresponding period of 1876, and 3228 tons in the corresponding period of 1875. Spain, again, took 6315 tons of our rails to March 31 this year, against 3058 tons in 1876, and 3046 tons in 1875 (corresponding periods). The exports to Italy during the past three months of this year were smaller than in the first quarters of 1876 and 1875. It is satisfactory to note that there has been a slight—although only a slight—recovery in the exports of our railway iron to the United States, as we sent the Americans 762 tons of our railway iron in the first quarter of this year, against 85 tons and 9013 tons in the corresponding quarters of 1876 and 1875. Brazil has been a good customer for our railway iron this year, but Chili has purchased less freely, and the utter collapse of Peruvian credit is reflected in the fact that we only sent 3 tons of our railway iron to the Republic of Peru in the first three months of this year, while in the corresponding period of 1876 we dispatched 1644 tons in the same direction, and in the corresponding period of 1875 no less than 9332 tons. After all, it is the colonial demand which has come to the rescue in 1877 and helped up the year's figures. This will be seen by an examination of the annexed table, showing the exports of our railway iron to British America, British India, and Australasia during the first three months of the last three years:

Colonial group.	1875.	1876.	1877.
British America ... Tons	8,221	2,083	879
British India	10,018	11,497	18,800
Australasia	22,583	8,245	12,774

Total 38,819 21,825 30,453

The increase of 4166 tons presented by the exports generally during the first quarter of 1877, as compared with the corresponding period 1876, was thus more than wholly due to the substantial revival in the colonial demand for our railway material. It is satisfactory to note that this revival is still continuing, since our aggregate shipments of railway iron to British America, British India, and Australasia in March amounted to 15,866 tons, as compared with 8264 tons in March, 1876. In the present feeble state of Canadian railway credit it is not very likely that our railway iron will be in very active request in Canada this year; but, on the other hand, the present low price of rails is evidently tempting the Anglo-Indian authorities to proceed with a certain vigour with the construction of the long-debated Indian State railways. Most of the Australian colonial treasuries are full to overflowing; and, as the Australians are clamouring for more railways, and as Australian lines are almost exclusively governmental ventures, we may reckon, we fancy, upon a tolerably well-sustained Australian demand for some time to come. The considerable reduction in the price of rails would really appear to be at last producing some of the natural effects lately anticipated from it, and to be encouraging our foreign and colonial friends to embark in the construction of lines which would otherwise have remained in abeyance. Should this actually prove to be the case, it is an element of hope for our ironmasters. We must not, however, be too confident. There is certainly a little flutter in the long stagnant tide, but it may prove to be a little flutter and nothing more. We must wait for three or four months before we can appreciate with any approach to exactitude the importance to be attached to the change for the better which is at last observable.

RUSSIAN MECHANICAL INDUSTRY.

The Czar's Government is still making great efforts to develop mechanical and metallurgical industry in Russia. Thus Russian railway companies are to be required to purchase all their rolling stock in Russia, and premiums ranging from 2400 to 3000 roubles per engine are to be given for locomotives manufactured at Russian works from Russian materials. The fact appears to be overlooked that this highly protectionist policy may have the effect of benefiting foreign industrialists who have established themselves in Russia, as well as native Russian industrialists, while if Russian locomotives cannot be produced so cheaply or so efficiently as foreign locomotives Russian industry suffers *pro tanto*. However, when statesmen, be they American or be they Russian, have a protectionist craze in their heads they are not given to stand upon trifles. We shall be curious to see the result of the experiment to which the Czar has now committed himself; but, *prima facie*, it will probably terminate in failure, as "protected" industry is never robust or vigorous industry.

What Russia requires is probably more commerce and industry and less Caesarism. The immense standing army which Russia maintains is not only a constant menace to Europe, but it is also a source of internal weakness to herself. If Russia made the utmost of her own resources, instead of hankering, as she appears to hanker, after the resources of her neighbours, and if the vast masses of men who now make up her huge armies were engaged in some useful industry, Russia would probably be a very different country to what she now is. Just as money makes money, so industry begets industry; and the more the Russians applied themselves to the development of the resources which nature has placed at their disposal, the more readily would the metallurgical and mechanical interests of Russia grow and expand of their own accord. But "protection to native industry" is just the policy which may be expected from a despotic—and by consequence a short-sighted—Government. The Czar and his Ministers appear to fancy that Caesarism and national development can grow together side by side; but we fear that this is a sad mistake, and that a powerful military nation cannot be at the same time a great industrial country. Not only does an exhausting Caesarism enervate the community which adopts it, but it has also the inherent danger of becoming uncontrollable, and of plunging a country into ruinous wars whether its inhabitants desire to be on bad terms with their neighbours or not.

There is another consideration to be dealt with in connection with current aspects of Russian affairs, and that is the present weakness of Russian credit. In a despotic country like Russia the Government counts practically for everything, and when the credit of the Russian Treasury is feeble almost every other description of Russian credit is feeble also. This remark especially applies to the credit of the Russian railways, many of which are guaranteed by the Russian Treasury; and if Russian railway credit is not so strong as it was the mere giving of premiums to locomotives of Russian manufacture will not necessarily increase the demand for them. The fact is Caesarism and credit cannot grow together, and wherever Caesarism is exaggerated credit languishes. The great pressing needs of Russia appear to be a more steadily sustained industry and a more solid stable credit, and to secure these blessings peace is most essential. But Russia is ever haunted by diplomatic deceptions and dynastic dreams. More territory appears to be of more importance in the eyes of Russian statesmen than more prosperity.

It is curious to see how extremes meet in this world. In the democratic republic of the United States the cry of "America for the Americans" has more than once evoked a large measure of popular enthusiasm. In despotic Russia a more or less similar cry of "Russia

for the Russians" is now being raised. But is it wise policy for a nation to isolate itself from the rest of the world and to rely wholly upon itself? We think not. Man is a gregarious animal, and we fancy that nations ought to be gregarious also, and that the influence of country upon country reacts favourably upon each. The influence recently announced by the Czar's Ministers, in regard to the encouragement of Russian locomotive building, may be based upon patriotic motives, but patriotism is not always far-sighted.

ROYAL INSTITUTION.—James Dewar, F.R.S.E., Jacksonian Professor of Natural Experimental Philosophy in the University of Cambridge, was on Tuesday last elected Fullerian Professor of Chemistry, in the room of Dr. Gladstone, resigned.

SOCIETY OF ARTS: Chemical Section.—The lecture on Thursday next will be by Chas. W. Vincent, F.R.S.E., F.C.S., "On Spontaneous Combustion in Factories and Ships."

COAL AND IRON IN THE UNITED STATES.—There has been little change in manufactured iron at Philadelphia, except that prices are rather easier for all descriptions. Consumption is rather irregular, but still the amount of business passing is not sufficient to keep the mills fully at work. The steel rail trade is rather irregular; some of the mills are full of business, while others have but few contracts on hand, and are anxious accordingly to secure orders. Buyers of lots of 1000 tons and upwards have been placing their orders at \$49 per ton currency. There is no immediate prospect for an improvement in the demand for iron rails at Philadelphia. There have been some enquiry for this description of rails for some new roads, but the terms of payment are such as could not be entertained. Prices of iron rails ranged from \$33 to \$37 currency per ton at the mills, according to quality. At Pittsburgh the manufactured iron trade continues fairly active; the general condition of the iron and steel market is unchanged. The total production of anthracite coal in Pennsylvania to March 17 this year amounted to 3,351,499 tons, against 2,369,936 tons in the corresponding period of 1876, showing an increase of 1,081,563 tons this year. The total production of bituminous coal in Pennsylvania to March 17 this year amounted to 528,117 tons, against 547,635 tons in the corresponding period of 1876, showing a decrease of 19,518 tons this year. The movement of coal over the Pennsylvania railroad to March 14 this year amounted to about 971,057 tons.

REPORT FROM CORNWALL.

April 12.—The fact that while the official standards remained unchanged the current prices for tin during the past three months have ruled at a lower figure was made thoroughly evident at the Doleach account, when the sale of 233 tons of black tin left a profit only of 1079*l*. on the twelve weeks, and the dividend fell to 5*s*. The average price realised was stated by Capt. Josiah to have been 2*s*. 4*d*. less than the average of the previous quarter, which made a difference of 650*l*. in the credit, tin having been sold as low as 42*s*. 2*d*. But yet there is good hope of better times. Capt. Josiah will never offer an opinion on mining again if tin does not improve by the end of the year, a statement which shows the strength of his convictions, and the results of the working of the boring-machine are most satisfactory. Its self-ventilating character makes the driving of the lower levels a matter of comparative ease, and paves the way for another great work—the extension of the man-engine to the 314 fms. level. This is to be done in two years, and then the miners will be able to go up and down by mechanical means a couple of thousand feet, which, so far as the labour is concerned, will convert the deepest mine in Cornwall into a comparatively shallow one. Mr. Rule made one of his persistent attacks on the coal merchant in general, and the Williams's in particular, but took very little by his mouth, since Sir Frederick Williams was present to defend himself, and the firm had several other champions, who reminded Mr. Rule that the test of the value of a thing was not merely its price, but its quality in connection with its price. Mr. Rule has done good service, but the force of any man's arguments is always weighted when he appears in the character of a rival in trade. Nevertheless, there is no reason why coals should not be analysed and the price fixed accordingly.

Mr. Rule had another hearty "pitch-in" at the meeting of the Cornwall Mining Institute, when he dealt with "the present mode of conducting Cornish mines, and the improvements needed to enable us to contend with foreign competition." He was decidedly successful in some of his comments on the way in which existing companies are too frequently financially worked; and very little could be said against—and much in praise of—the principles he laid down for the management of mines generally. The difficulty would arise in putting his ideas into practice. It does not follow, however, that the appointment of one man to manage several concerns must be a mistake. As to the statement that men should be paid properly there is no doubt whatever that Mr. Rule is in the right, only a fair day's work should be secured for a fair day's wage. That miners should try their hand at smelting we have often advocated. Altogether there was nothing new in what Mr. Rule said to say, but a good deal of it was very shrewdly put.

Mr. R. Symonds, at the same meeting, dealt with the question of mining leases in a clear and practical manner. But he hardly went so thoroughly into it as was to be desired. What is wanted is not a mere revision of terms but a change of conditions—a radical reform. Mr. Symonds endorses the view that dues should be paid out of profits only, for which we have again and again contended; and this is really the only point worth fighting for. Fair compensation for land destroyed, adequate rent for land occupied, liberal dues on profits only—these are the three conditions of all true lease reforms. Of course there are liberal landlords, like Lord Roberts and Mr. Bassett, under whom mines are as well off as if leases were so cooked, but all mining men are familiar with instances to the contrary.

There is no doubt that just now New Consols is one of the most prominent topics in mining circles, though there certainly are quarters where it and its concerns excite very little interest. There appears to be two very divergent elements in the discussion which is now taking place, with a few traces of the existence of the middle term between them. According to one set of talkers and writers the misfortunes of New Consols are all the fault of the directors; according to another the manager is alone responsible. It is only one here and there, apparently—if we had to judge solely by that which is apparent on the surface—who can see that, although mistakes may have been made, both directors and manager have done their best to forward the respective views they entertained for the welfare of the mine. The directors have, somehow or other, in spite of all the financial difficulties of the present dull time, continued to create an enormous working plant, and to lay out the mine on a scale hitherto unknown in operations of such a character. Captain Pryor has been the most zealous advocate of the wet process of treatment, in the face of an amount of latent opposition to the new-fangled notions, the amount of which only those well acquainted with the county can understand. As to the mistakes, they of course are inseparable from all undertakings of such a character, conducted on such a scale; but really sufficient allowance is made neither for this nor for the fact that the company have been dealing with a principle of treatment which, though thoroughly sound in itself, has through unfortunate circumstances never been associated in this county hitherto with more than a scientific success. This one fact alone is a very serious hindrance to the efficient operation of a company carrying on such an undertaking; and that, notwithstanding all this, and the avowedly experimental character of the proceedings, matters should have been brought to the point reached really shows how thoroughly those concerned have had the interests of the undertaking at heart. Whatever comes of New Consols, what has been done there from which the county will be by far the better in time to come; but it is to be hoped that those who have borne the burden and heat of the day there will not lose their reward. Nor is there any reason why they should if, instead of worse than idle recriminations, all interested should unite to push forward the enterprise to that thorough success which, with judicious action, is near at hand.

The discovery of silver ore at Wheal Newton is certainly very remarkable. The forms include native silver, in wire; argentic

pyrrhotite, and staphanite, all embedded in chalybite (carbonate of iron), with fluorite, chlorite, and friable quartz. There is no doubt that the lode is an essentially well defined silver-bearing lode. In the 40 ft. level it is about 18 in. in width, and the "country" consists of a beautiful short-jointed soft, almost white, clay-slate, composed of the production of the richest of minerals. Such is the statement of a friend of great experience who has lately visited the mine. Hundreds of thousands of pounds worth of silver has been raised from this locality.

There has been a strike, this time among the bal girls, and not by any means of a serious character. The executive at West Seton refused to assimilate the hours of work on the copper floors to those in the tin yard, and accordingly told the girls there that they must work until half-past five instead of five. This they refused to do, and two or three were turned off, and then the rest struck, and marched in procession to Camborne, singing Sankey's hymns. The day most of the younger ones went back, but the elder ones stayed out, though in the present condition of affairs there would be no difficulty in supplying their places ten times over.

The point is little to do with mining matters, but it is really amusing to find that the good people who have been assuming that a bishop makes a city, and have been hailing from the "City of Turo" accordingly, have at length found out their error, and learnt that Turo is not superior to Manchester, which requires an Order in Council to effect that object. The Order, it is said, is likely to be applied for, but would it not be better to pause awhile? As a town Turo is decent, thriving, and respectable, as a city it would take a very long time indeed. A citizen has no privileges above a burgess, and what is in a name?

The Cornwall Minerals Railway Company will possibly find it necessary to be off with the old loves before it is on with the new. Negotiations are in progress for its transfer to the Great Western Railway Company, but the shareholders of the Newquay and Cornwall Junction and Lostwithiel and Fowey Railways are by no means satisfied with the status quo so far as they are concerned, and have held meetings at St. Austell. At the Newquay and Cornwall Junction meeting Mr. E. Carlyn presided, and explained the questions at issue between this company and the Cornwall Minerals Company. After some discussion the following resolution was passed:—"That this meeting be again adjourned, for the purpose of getting further particulars respecting the claims of this company against the Cornwall Minerals Railway Company for arrears of rent; and that in the meantime these creditors be requested to communicate with the Great Western Company, expressing the dissatisfaction which the shareholders of this company feel at the non-payment of the rent due from the Cornwall Minerals Railway Company." At the Lostwithiel and Fowey meeting Mr. W. Lowry, of Fowey, was the Chairman, and stated that in accordance with instructions given to the company's solicitors a petition had been presented against the Cornwall Minerals Railway Bill now before Parliament. The directors had, at a meeting that day, passed a resolution appointing Mr. E. Carlyn, of the firm of Carlyn and Stephens, solicitors, St. Austell, to act as solicitor on behalf of the company in the matter of the petition against the Bill. The meeting approved of the action of the directors, and confirmed what had been done.

Information travels slowly in some parts of Cornwall. It is now several weeks since the McKean drill was set to work by Capt. Lewis in West Maria and Fortescue, yet a mining authority in Cornwall has this week been deploring that there are no accounts as to whether the machine was purchased and fitted, whether it is working, or who is the maker. A report of the successful trials appeared in the Mining Journal a month since.

TRADE OF THE TYNE AND WEAR.

April 11.—There is little good news to report in connection with the Coal and Iron Trade here. The quarterly meeting of the iron trade was held on Tuesday, when there was a good attendance. Buyers are extremely cautious, but on the whole iron is more enquired after. The foreign demand is becoming brisker, and a better demand is expected, but as stocks are getting large it may still be necessary to reduce the price. The reduction in the wages of the Durham miners comes into operation from April 2. This will afford a little relief to the harassed coalowners, but it will seriously injure many of the miners, as they are only in many cases making three days per week. In East Durham, however, at Ryhope, Silksworth, &c., the colliers are doing well, most of them being engaged full time. The workmen employed at Thirley Colliery, west of Newcastle, are now idle. The men refused to submit to a reduction of 15 per cent. in the Brockwell and Main coal seam unless the question was submitted to the joint committee. A number of men employed in the Mainlin seam (steam coal), in Lord Durham's collieries on the Wear, have received notices to leave. The Northumberland and Colliery owners have intimated to the men that they will require a reduction of 15 per cent. in the wages of all the men employed in hard coal works, and 10 per cent. in soft coal works, and also that they cannot afford to allow free houses and coals in the present state of the trade. They are, however, willing to refer all these points to arbitration. Mr. Yorke, the stipendiary magistrate for South Shields, has been appointed local umpire, to sit with a joint committee, and adjust any local difference that may arise in the Northumberland coal trade.

The exports of coal from the north-eastern ports foreign show a considerable falling off in March, as compared with March, 1876. The total shipments foreign being 447,454 tons, against 481,995 tons in March last year, and coastwise there is a slight increase, the numbers being 459,941 tons, against 453,152 tons in March, 1876. The port of Hull is not included in this statement, but the quantity shipped there is of trifling amount. There is, however, one hopeful feature in connection with the trade of the district—that is, the great increase of the import trade; this business is rapidly increasing. At the Tyne Dock the imports are mainly raw materials, and consist of esparto grass, lead and copper ores, iron ore, &c. These ores are now sent to the Tyne in preference to Hull, as the vessels can secure cargoes of coal and coke for Spain, &c., and the ores are sent to Sheffield and other inland parts by rail. The increase of this trade is a powerful argument in favour of the scheme for the further improvement of the Tyne and the formation of more deep-water docks.

Coal cutting machines have now been tried at various places in this district, and for a long period, but so far the trials have not been crowned with success. The most persistent attempt to bring them into use has been made at Hetton. At one time three of these machines were at work, two of Baird's machines, and one of Gillott and Copley's, but at present only one machine (Baird's) is worked, and this is not likely to be worked much longer, as the result is not satisfactory. It is indeed at present costing more per ton to work by this method than by the ordinary system with hand labour. The Baird machine is preferred here to the other. These machines cost £100, and the average work done in eight hours is 27 yards in length, and 10 in 2 feet 9 inches under, the seam being 3 feet 10 inches in height. These machines are worked at the present moment in America, but in that case the seams are of considerable thickness, and the opinion is gaining ground here that coal cutting machines will not prove profitable in these seams. Of course, the cost of hand labour is much less at present than in 1873, which was an important consideration.

The Chemical Trade has been very quiet, with the exception of bleaching powder, which has been in good demand, and increased rates have been asked and paid in many cases.

A very important exhibition has been opened this week at South Shields, promoted by the gas company there. The engineer to this gas company, Mr. J. W. Warner, has been very active in promoting and inventing new appliances to be worked by means of gas, and has determined a short time ago to hold the exhibition, and to offer silver medals for competition, to be open to all engineers in the United Kingdom. The articles to be exhibited are divided into seven classes. Prizes were awarded to the successful competitors in five of these classes on Tuesday evening. The others have not yet been decided upon by the judges, who have had an arduous task, Mr. J. Pettinson, analytical chemist, Newcastle, and Mr. W. Bennett, C.E., London. The exhibition has been very successful, having been

attended by large numbers of people, residents in the locality and from distant towns. The prizes awarded were—

CLASS 1.—Efficient, durable, and cheap portable stoves, for boiling, grilling, frying, &c., suitable for a mechanic's home. Silver medal. Mr. J. E. Prust, 78, Smallbrook street, Birmingham, for his domestic cooking stove, with one ring burner. Price 28s.

CLASS 2.—Family cooking stoves. Silver medal. Messrs. John Wright and Sons, Birmingham, for their 53A family cooking stove, with their hot water boiler and oven. Price 112. 5s. Capable of cooking for from 12 to 15 persons at a cost of threepence. The chief feature of the stove is that the heat is reflected from the bottom of the stove, and the waste heat is utilised for heating the oven, in which pastry and bread can be baked while the meat is being cooked. In this class Mr. J. Wynn, of Cheltenham, received honourable mention for his excellent stove. Price 52. 10s.

CLASS 3.—Gas baths. Silver Medal. Mr. Charles Wilson, 132, Woodhouse-lane, Leeds, for his 72. 10s. bath, heated by gas, free from smoke or smell, and capable of heating 20 gallons of water in about 30 minutes.

CLASS 4.—Closed apparatus for heating halls, small conservatories, &c. Silver medal. John Wright and Sons, Birmingham, for their two specimens of hot-water apparatus, heated by gas and hot air, for conservatories, &c.

CLASS 5.—Open gas fires. Silver medal. Messrs. B. Leoni and Co., London, for their small tubular-shaped calorifiers. Price 27. 5s. Suitable for offices, halls, or small rooms.

CLASS 6.—Gas engines. Two competitors.

CLASS 7. Fancy articles, including lace singlers, coffee roasters, &c.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

April 12.—Very little change has taken place in the state of trade during the past week in what may be termed the Midland coal field. Up to the present time there has been a fair amount of business done with London, but there are now symptoms of a decline, as is usual when summer approaches. Taking the quarter ending March last, however, there has been a marked decline in the consumption as compared with the same period of last year, thus displacing the views of the late Royal Commission, that consumption would increase *pari passu* with the increase of population. Prices, too, have been as low as in 1870 and 1871, and it is to be feared will go down still lower. As an illustration of the state of the trade, and what it is expected to be, it may be stated that the Boythorpe Colliery Company, whose pits are close to Chesterfield, have just given those in their employ, consisting of 300 men and boys, a fortnight's notice to leave, having decided to set the colliery down for a few months, in consequence of the depressed state of trade and the low prices prevailing. Like many others in the district, the Boythorpe Company have not been working much more than half time for several months past. There is likely to be a little more doing in steam coal, but the prospects of the summer trade are anything but cheering. At the lead mines there does not appear to be much signs of activity, excepting, perhaps, in one or two instances. Lead mining, for some reason or other, does not progress in Derbyshire, although it is the county where lead mining has been, in all probability, the longest carried on, the principal centre of the trade at the present time, Wirksworth, being an old Roman town. There are not many ironstone mines in the county, a good deal of the ore being got in connection with the coal measures. What is raised, however, is insufficient for the requirements of the furnaces, so that a large tonnage continues to be imported from Northamptonshire, which is used along with the local ore. The iron trade is much as it has been for some weeks; most of the foundries are favourably off for business, whilst the few mills in the county have been kept tolerably well going. The erecting of the new plant works at Derby is causing the building of a very large number of houses in the town, and at Litchurch, which joins; so that Derby is becoming a very important place indeed.

Most of the Sheffield trades are far from being brisk, and complaints are pretty general as to the stagnation which exists. The mills engaged on plates have been running full time, there being a very fair demand for those for ships and boilers. Iron rails do not meet with much enquiry, whilst there appears to be a decline with respect to the output of those made of Bessemer. The engineering works are not so busy as they were a short time since, whilst the foundries have been working very well since the commencement of the year. Very little business is being done with America in cutlery or other goods; but, on the other hand, a steady trade is being carried on in edge tools and implements with our colonies. In the South Yorkshire district the ironworks are in a tolerably healthy state, there being an average production of pig, whilst the foundries are fully employed. Several of the collieries are rather better off than they have been, many now working five days a week. A fair tonnage of Silkstone has been passed on to the Great Northern from London during the week, whilst there has been a rather better enquiry for steam qualities. A good deal of smudge is now being used for converting into coke, of which a large quantity is now being turned out for the use of the blast furnaces of North Lincolnshire and some parts of Derbyshire.

A new railway connecting London with the South Yorkshire coal field is again proposed. It would go from Sutton (on the Great Northern) to the Manchester, Sheffield, and Lincolnshire Railway at Mexbro'. The line would be an important and valuable one, but would doubtless meet with an amount of opposition, which has been the case on two or three previous occasions, that would be likely to defeat it.

At the Stafford Main Colliery, about a couple of miles from Barnsley, 300 men and boys have received notices, which will expire on the 19th inst., to cease work, the owners having determined to widen the shaft. The work will occupy about six months.

The strike at the Darfield Main Colliery continues, the men receiving the usual allowance from the Association, besides going round collecting money and provisions. The owners state that the men have been enjoying for work in some places 3s. per score more than is paid by other firms working the same seam, and which is harder to bring down than at Darfield. The rise was given when the pits were opened out, after being flooded for a long time owing to a fire, and when there were some difficulties to contend with; these, however, have been cleared away, but the men consider that once having received the money it ought to be continued. About 50 men are now employed in keeping the roads and airways in an efficient state, and it is said by the owners that they are now losing less money than they did when they had all their men at work.

REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

April 12.—Perhaps the state of the iron industry presents a more satisfactory appearance than of late. The news that an American order—though not of large dimensions—has been obtained by this country, although it has not been lodged in this district, cannot but be looked upon as extremely gratifying, seeing the hostile tariffs British ironmasters have to contend against. During the week large clearances have been made from the ports of this district, principally of rails. Sweden and Denmark continue customers. An Australian rail order is being worked out, and there is a talk of more orders for our North American dependencies. A large parcel of iron has been sent to the South of Russia. A few small clearances of bar-iron have been made to the Continent, and if anything this department shows a slight improvement. Pigs are unchanged. Prices for finished iron are exceedingly low, and some of the rail orders which have been received are said to return no profit to masters, who prefer to work at a slight loss to closing their establishments altogether. As usual, a fair amount of business is doing at the steelworks. There has been a dispute at the Panteg Works, but the men have now consented to go to work at a reduction. Tin-plates are very little changed. Prices appear to be getting firmer. The restriction in make is still maintained, most of the men being on two-thirds time.

Next, to refer to the coal industry. Very little of a satisfactory nature can be said. Shipments have during the week fallen off to a slight extent. Prices are unchanged, and freights are also low. A fair demand for steam qualities exists, but for house coals the enquiry has rather declined. Very little is doing in patent fuel. Notices to terminate contracts are still more frequent than desirable. At the Nant-y-Glo and Blaenau Collieries notices were posted, stating that contracts will cease at the end of the present week. Should this be strictly carried out, about 2000 men will be affected, but it is believed that it is desired to effect a reduction in wages.

At last the award of the South Wales Conciliation Board has ap-

peared. It fixes the wages still at the minimum standard—a result which was universally expected, for no one thought a rise would be the result of the investigations of the accountants. In fact, their examination of the masters' books show that the selling prices of coal for the half-year ending Dec. 31 last show a falling off compared with the previous half-year.

The property of the Brynmawr Coal and Iron Company, which has been wound up under the Companies Act, is announced to be sold by public tender on the 17th. The property is valuable and extensive, and comprises the Clydach Ironworks and the Milfram and Tillery Collieries, and is situated at Llanelly and Aberystwith. The property is well provided with railway accommodation.

A large meeting of colliers has been held in the Rhondda Valley to promulgate the Union, the members of which have greatly fallen off of late, having been reduced to about one-eighth of what they were some 18 months ago. A resolution in favour of joining the Union was passed, and Mr. Halliday is to be invited to address the men.

It is believed that the dispute between employers and employed at Cwmpennar Collieries, Mountain Ash, with respect to the introduction of the double-shift system, will be settled amicably before the notices to terminate contracts have expired.

An important application has been made to the Railway Commissioners by the Victoria Iron and Coal Company, who are the lessees of a colliery at Ynysgeinon, Glamorganshire. The applicants asked the Commissioners to make an order compelling the respondents, the Neath and Brecon Railway Company and the Midland Railway Company, to give the greater railway facilities. The applicants wanted their mineral traffic conveyed to Swansea by a shorter and more continuous route. The Commissioners grant the application.

The enquiry as to the death of a man who was killed by an explosion of gas at the Robbing Mine Pit, Cyfartha, has been concluded. The jury found that deceased was killed by an explosion of gas, and added that they considered a competent man should have been employed to examine the works before the men went in, or the owners have "placed a door in such a place before the explosion occurred to direct the air in the manner they have done since." They believed if these things had been done the explosion would not have occurred.

At the Troedyrhiw Colliery No. 3 pit in the Rhondda Valley, belonging to Messrs. James Thomas and Co., a serious inundation occurred yesterday evening resulting in the imprisonment of 14 men and boys, 10 of whom will, it is feared, be sacrificed. Upon the rescuing party descending the pit, which is 92 yards deep, it was found that the whole of the workings to within a few hundred yards of the bottom of the shaft were filled with water to the roof, but faint knocking being heard through the solid estimated 12 yards thick, driving was at once commenced, the imprisoned men at the same time working for a connection. By four o'clock on Thursday morning the piers were within speaking distance, and two hours afterwards they holed, the result being a loud explosion for the escape of the air which had fortunately been shut in and compressed by the water—it was no doubt the compressed air that enabled the men to work until the opening was effected. Morgan, the hardest worker of the imprisoned five, was unhappily killed by the blow of air, but the four others were rescued, and are now progressing. Another party of nine is imprisoned at another place, and they are driving for them with all speed, and as faint knocking is still heard it is hoped that some of them at least may be got out alive. Mr. Galloway, the Government Inspector, and the various coalowners and mining engineers in the neighbourhood are present to render all the aid in their power.

A meeting of the Newport Alexandra Dock Company has been held at the London offices, under the presidency of Lord Tredgar. The meeting was held for the purpose of raising the remainder of the unissued capital authorised by the Alexandra (Newport) Dock Act of 1865, 1868, and 1876. Resolutions were passed in accordance with this, and in the course of the proceedings the future of the dock was hopefully spoken of.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

April 12.—The Coal Trade of both North and South Staffordshire is at a low ebb, the demand as well for ironmaking as for the pottery and the hardware making requirements being much within the capabilities of the pits. The demand for pig-iron has fallen off in both districts, with the result that few furnaces are blowing their full complement of tuyeres. Mills and forges which did not begin last week have re-started this week with but little accumulation of orders received during the Easter week of idleness. Nor will the orders given out to-day in Birmingham or yesterday in Wolverhampton at the quarterly meetings result in much improvement upon the condition of things here described, but there was at those meetings a pretty confident hope that as the quarter advances there will be a steady improvement.

This view was not, however, universal, and the fear that the demand may be no better leading to the making of preparations by some ironmaking firms to stop their works wholly or in part. This is notably the case with Messrs. G. B. Thorncroft and Co., of Wolverhampton. To their chief employees at their two finished ironworks in that town, and at their colliery near to Bilston, they have given notice to terminate contracts at Midsummer, and if before that date trade should not get better they will then give the customary fortnight's notice to their operatives.

The unprofitableness of ironmaking in this district is making it self manifest in the balance sheets of some of the joint-stock companies and in the preparations for winding up on the part of others. Nearly 20,000 has been lost by the Star Valley Iron and Coal Company, at Albion, in the past two years, and a petition for winding up will be heard in the Court of Chancery by the Masters of the Rolls on Saturday. The shareholders are some wealthy Manchester capitalists, who a few years back bought the property from Messrs. Philip Williams and Co., for somewhat over 100,000. 60,000 was paid down, and debentures were given for the remainder. A batch of debentures is now falling due. The shares are of 20s. and 12s. has been already paid. There have been heavy outlays on furnaces and collieries since the property has passed into the hands of its present proprietors.

The meeting of the Chillington Iron Company in Wolverhampton, on Saturday, passed off satisfactorily, considering that the loss has been 7500l. upon the year, even after the directors and managing directors have given back 1700l. of their yearly allowances. Mr. G. J. Barker is now to be the chairman of the company, and his brother—Mr. Thomas Barker—is to be manager at 2500l. a year, and the directors' remuneration is to be increased from 800l. to 1000l. a year, thereby enabling the board to recognise the services of the chairman, who had for five years been joint managing director with his brother, also at 2000l. In this way the company will save 1800l. a year in managerial charges. The Brothers Barker hold between them about one-third of the company's stock.

Shares of the last-mentioned company are firmly offered at 47, but without business being done. John Bagnall and Sons shares are on offer at 34, without securing purchasers. The 20l. paid-up shares of the Aldridge Colliery Company are in request at 28l., and sales are taking place at 29l., whilst for the Sandwell 10l. shares 21l. is still being got. Mil-Cannock Colliery shares also stand well in the market, the 20l. shares (10l. paid) being offered at not under 5l. premium.

I am afraid that too much is being made of the order which has been secured from America for cotton ties, and suspect that 4000 tons which have fallen to South Staffordshire, to Runcorn, and to Manchester represent the bulk, if not, indeed, the whole of the order.

At Birmingham several objects of interest more or less remotely connected with ironworking claimed the attention of the Quarterly Meeting. Among these may be mentioned Pumphrey's patent forty-fold writer, for multiplying copies of writings, drawings, sketches, &c., with the aid of an ordinary copying press; samples of T. H. P. Dennis and Company's patent Fallway high-pressure valves, for steam, water, or gas, in which friction and possibility of leakage are reduced to a minimum; and a working model of Mr. Worthington's fog signal apparatus or machine for trying signals on the rails in foggy weather, which is thus described:—"At the first look it reminds one of the star-fish, the principal part of the machine being a

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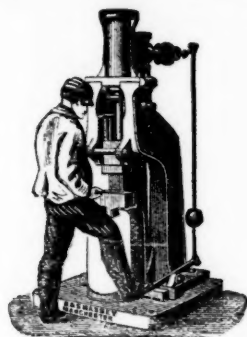
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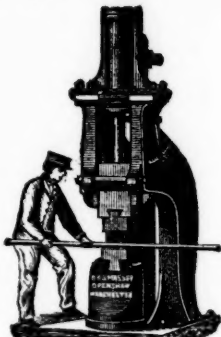
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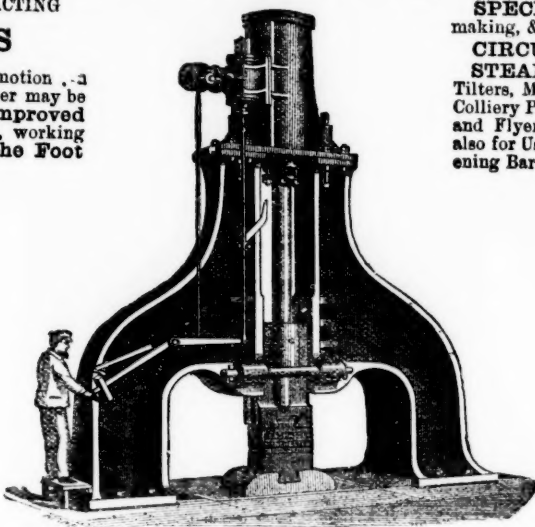
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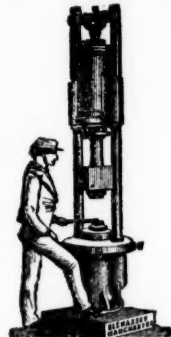
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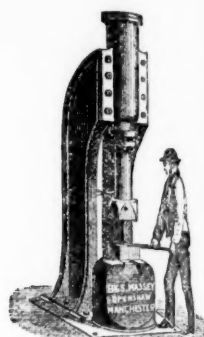
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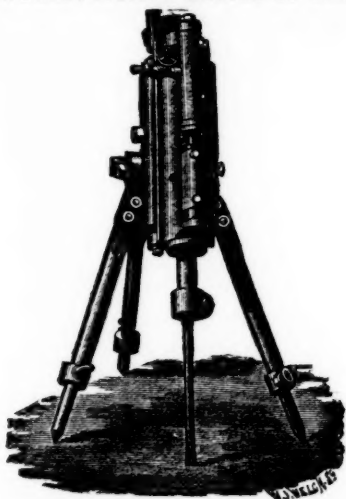
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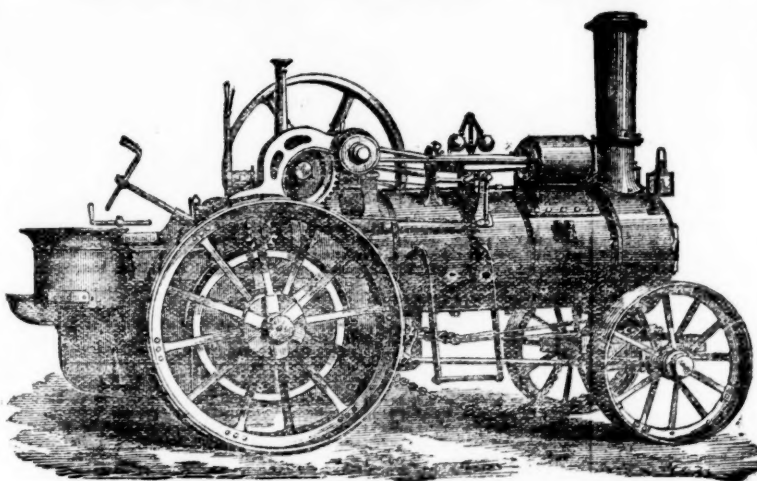
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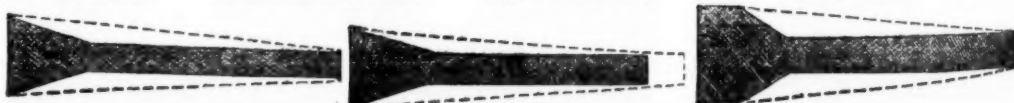
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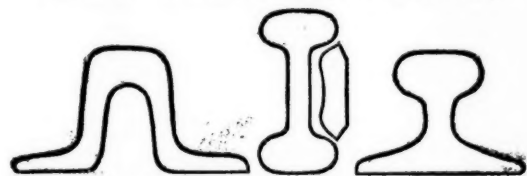
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15	Albion Steel and Wire Co. [L.]	14 0 0
5	Altameli Colliery [L.].....	8 0 0
100	Asbury Co. [L.].....	5 0 0
10	Bagnall, John, and Sons [L.].....	90 0 0
10	Benhar Coal Co. [L.].....	10 0 0
50	Bilbao Iron Ore Co. [L.].....	50 0 0
10	Bilson & Crump Meadow Coll. Co. [L.].....	10 0 0
4	Black Cwmnach Coal Co. [L.].....	4 0 0
50	Blinvacon Iron and Steel Co. [L.].....	50 0 0
100	Bolekov, Vassiliou, and Co. [L.].....	80 0 0
50	Bowling Iron Co. [L.].....	50 0 0
50	Britannia Ironworks [L.].....	80 0 0
50	Brown, Bailey, and Dixon [L.].....	28 0 0
100	Brown, John, and Co. [L.].....	70 0 0
5	Cakemore Colliery Co. [L.].....	5 0 0
5	Cammell and Co. [L.].....	80 0 0
10	Cardiff and Swansea St. Coal Co. [L.].....	6 0 0
10	Cardigan Steel and Wire Co. [L.].....	8 0 0
10	Central Swedish Iron and Steel [L.].....	10 0 0
5	Chapel House Colliery.....	5 0 0
50	Charlton Iron Co. [L.].....	50 0 0
5	Chatterley Iron Co. [L.].....	45 0 0
10	Chillingham Iron Co. [L.].....	10 0 0
1	Clee Hill Colliery Co. [L.].....	10 0 0
10	Conselt Iron Co. [L.].....	7 10 0
1	Constant Spinning Co. [L.].....	1 0 0
50	Cooke, William, and Co. [L.].....	40 0 0
10	Darlington Iron Co. [L.].....	10 0 0
5	Davy Brothers [L.].....	10 0 0
5	Diamond Fuel Co. [L.].....	22 10 0
52	Ebbw Vale Co. [L.].....	5 0 0
100	Fox, Samuel, and Co. [L.].....	50 0 0
10	General Mining Ass. [L.] (El returned).....	9 0 0
20	Great Western Coal Co. [L.].....	17 0 0
5	Gwynneburg Colliery Co. [L.].....	2 0 0
10	Hopkins, Gilkes, and Co. [L.].....	11 0 0
5	Knowles, Andrew, and Sons [L.].....	17 0 0
10	Llay Hall Coal, Iron, & Firebrick [L.].....	10 0 0
5	Littledean Woodside Coll. Co. [L.].....	5 0 0
50	Lyvny, Ogmor, & Tondur Co. [L.].....	50 0 0
10	Lydney and Wigpool Iron Ore [L.].....	8 5 0
10	Marbella Iron Ore Co. [L.].....	10 0 0
5	Mersey Steel and Iron Co. [L.].....	5 0 0
10	Midland Iron Co. [L.].....	10 0 0
5	Mold Forge Co. [L.].....	5 0 0
10	Monkland Iron and Coal Co. [L.].....	10 0 0
4	Mynydd Iron Ore [L.].....	10 0 0
100	Nant-y-Glo and Blaena (8 p.c. pref.).....	8 10 0
1	Nerbudda Coal and Iron New Shariston Collieries [L.] Pref. Newport Abercrom Coal [L.].....	0 0 0 20 0 0 10 0 0
20	Northampton, Coal, Iron & Wagon [L.].....	8 0 0
10	Northfield Iron Co. [L.].....	8 0 0
1	Orston Green Coal and Wagon [L.].....	1 0 0
5	Palmer's Shipbuilding and Iron [L.].....	25 0 0
100	Parkgate Iron Co. [L.].....	68 0 0
20	Patent Nut and Bolt Co. [L.].....	10 0 0
20	Patent Shaft and Axletree [L.].....	10 0 0
20	Pelissal Coal and Iron J. J.	15 0 0
50	Phoenix Bessemer Co. [L.].....	40 0 0
50	Rhyney Iron Co. [L.].....	80 0 0
10	Richards and Co. [L.].....	10 0 0
100	Sandwell Park Colliery Co. [L.].....	100 0 0
100	Sidra ditto	10 0 0
100	Rhoets Iron Co. [L.].....	10 0 0
100	Rhymbridge Iron and Coal [L.].....	55 0 0
50	Rilkstone & Dodworth Cl. & Iron [L.].....	27 0 0
20	Skerne Ironworks [L.].....	20 0 0
50	Romorrosto Iron Co. [L.].....	50 0 0
20	Routh Wales Coal Co. [L.].....	17 0 0
100	Staveley Iron and Coal Co. [L.].....	60 0 0
100	Ditto ditto New	10 0 0
40	South Cleveland Ironworks [L.].....	20 0 0
10	Swansea Valley Steam Coll. Co. [L.].....	10 0 0
100	Thames Iron Company.....	100 0 0
50	Tredegair Iron and Coal Co. [L.].....	12 0 0
25	Ditto B. shares	25 0 0
20	Tliverston Mining Co. [L.].....	12 0 0
1	United Bituminous Collieries [L.].....	1 0 0
10	Vancouver Coal [L.].....	8 0 0
100	Vickers, Sons, & Co. [L.].....	100 0 0
50	Welsh Ironworks Co. [L.].....	50 0 0
25	W. Cumberland I. and Steel [L.].....	20 0 0
10	West Mostyn I. & S. [L.] (12 p.c. pref.).....	8 0 0
10	West Swansea Colliery Co. [L.].....	10 0 0
10	Whitehaven Iron Co. [L.].....	10 0 0
100	Whigan and Whiston Coal Co. [L.].....	70 0 0
100	Wigan Coal and Iron Co. [L.].....	75 0 0

WAGON COMPANIES

10	Birmingham Wagon Co. [L.].....	10	0 00	21%	21%
10	Ditto, 2nd issue	4	0 00	8	15
10	Ditto, pref. 5 per cent.	10	0 00	19%	19%
20	British Wagon Co. [L.].....	10	0 00	24%	24%
10	Gloucester [L.].....	10	0 00	19%	19%
10	Ditto, 5th issue	5	0 00	37%	37%
10	Met. Rail. Car. and Wagon Co. [L.].....	5	0 00	37%	37%
5	Ditto, pref. 6 per cent.	5	0 00	57%	57%
50	Midland	50	0 00	23%	23%
20	North Central Wagon Co.	20	0 00	27%	27%
5	Rail. Car. [L.] (Oldbury)	5	0 00	10%	10%
5	Ditto, pref. 6 per cent.	5	0 00	6	6%
20	Sheffield Wagon Co. [L.].....	15	0 00	3%	3%
10	Yorkshire Wagon Co. [L.]	10	0 00	4%	4%

TELEGRAPH COMPANIES.

15	Anglo-American	100	0	0	574	171
10	Brazilian Submarine	10	0	0	...	...
20	Direct United States Cable	20	0	0	114	116
10	Eastern	10	0	0	...	...
20	East from Australia and China	20	0	0	...	...
10	Great Northern	10	0	0	...	...
25	Indo-European	25	0	0	19	20
10	Mediterranean Extension	10	0	0	...	...
8	Submarine	10	0	0	12	5
100	Submarine	100	0	0	...	...
20	West India and Panama	10	0	0	...	...
20	Western and Brazilian	20	0	0	...	...

MISCELLANEOUS.

Atlantic and Great Western Leased Lines, Rental Trust	100	0 0.	35	40
25 Austral. Mort. Land and Finance [L.]	5	0 0.	4	45
25 Australian Agricultural	21	10 0.	93	98
10 Aveside Engine [L.]	7	0 0.	4	2
stk. Baltimore and Ohio, 6 per cent.	100	0 0.	108 1/2	109 1/2
stk. Cent. of New Jersey Con. Mort.	100	0 0.	81	81
stk. Cent. of Calif., 1st Mort. 6 p.c.	100	0 0.	100 1/2	104 1/2
25 City of London Real Property	15	0 0.	10	10
25 Copper Miners of Eng. (7 p.c. pref.)	25	0 0.	0	0
5 Credit Foncier of England [L.]	5	0 0.	136	136
5 Diamond Rock Boring	4	10 0.	13 1/2	1
15 English and Foreign Credit	8	0 0.	0	0
16 Fore Street Warehouse [L.]	14	0 0.	14	15
15 Foster, Porter, and Co. [L.]	10	10 0.	11	12
10 Great Northern Works Co. [L.]	5	0 0.	0	0
1 Glaisdale Whinstone Quarry	1	0 0.	1	1
1 Greenhill [L.]	1	0 0.	1	1 1/2
17 Hudson's Bay Company	17	0 0.	13 1/2	14
10 Huntington Copper and Sul. Co.	9	0 0.	8	8
stk. Illinois Central, \$100 shares	100	0 0.	45	47
stk. Illinois & St. Louis Bridge, 1st Mort.	100	0 0.	93	93
stk. Ditto, 2nd Mort., 7 per cent.	100	0 0.	93	93
stk. Ditto, 3rd Mort., 5 p.c.	100	0 0.	87	89
stk. Ditto, 6 per cent.	100	0 0.	97	97
1/2 Imperial Credit [L.]	7	10 0.	7 1/2	7 1/2
— Ditto, Surplus Certificate	—	—	—	—
stk. Lehigh Val. Con. Mort., A, 6 p. cent.	100	0 0.	98	98
10 Milner's Safe [L.]	10	0 0.	96	96
25 National Discount [L.]	5	0 0.	83	83
stk. N. Cent. Rail. Con. Mort., 6 per cent.	100	0 0.	43	45
10 New York and Jersey Company	6	0 0.	4	4
10 Pawson and Co. [L.]	5	0 0.	38	40
50 Peninsular and Oriental Steam	50	0 0.	88	88
stk. Pennsylv. Gen. Mort., 6 p. cent., 1910.	100	0 0.	50 1/2	50 1/2
stk. Ditto, Con. Sink. Fund, 6 p. c., 1905	100	0 0.	89	89 1/2
stk. Scottish Aust. Investment Company.	100	0 0.	185	185
stk. Ditto, 6 per cent. Preference	100	0 0.	121	121
10 Silver Light (ord. sh.)	—	—	—	—
12 St. Cathar's Shipbuilding	—	—	—	—
12 Telegraph Construc.	12	0 0.	20 1/2	21 1/2
5 Ditto, Second Bonus Three per Centa	5	0 0.	2 1/2	2 1/2
10 Thariss Sulphur and Copper Co.	10	0 0.	22	22
10 Union Pacific Land Grant, 1st Mort.	100	0 0.	97	97
stk. Union Pacific Railway, 1st Mort.	100	0 0.	101 1/2	105 1/2

NON-DIVIDEND FOREIGN MINES

Shares.	Divs.	Paid.	Last Fr.	Clos. Fr.	Last Call.
30000	Anglo-Australian, g, Victoria*	2 10 0	...	...	...Fully pd.
40000	Anglia Phosphate, W. India (4000 issued)	10 0 0	...	...	...Fully pd.
12000	Argentine, g, Argentine Republic	5 0 0	...	...	...Fully pd.
10000	Australian Central, g* (also 8000 deferred shares)	5 0 0	5	4½ 5	...Fully pd.
8000	Bellavista, s, Peru* (£10 shares)	10 0 0	...	...	...Fully pd.
80000	Blue Tent, <i>hyd.</i> , California	5 0 0	...	...	...Fully pd.
25000	Cesena Sulphur Company, Romanga, Italy*	10 0 0	8½	3 3½	...Fully pd.
50182	Chentales, g, s, Nicaragua†	2 0 0	¾	...	...Fully pd.
18000	Comdes Cables, s, Chile	5 0 0	5½	¾ ¾	...Fully pd.
25000	Excelsior Hydraulic, s, Washing Co., California*	6 0 0	...	4½ 6½	...Fully pd.
100000	Eschequer, g, s, California†	1 0 0	...	...	...Fully pd.
40000	Holcombe Valley, g, s, California†	1 0 0	2½	1½ 1	...Fully pd.
8000	Hornachos, * s, s, (£10 shares) Spain	5 0 0	...	...	...July 1871
10000	Imperial Brazilian Collieries, Brazil*	5 0 0	13½	13½ 13½	...Jan. 1874
130000	I. X. L., g, s, California*	1 0 0	...	...	...Fully pd.
50000	Javali, g, Nicaragua	2 0 0	1	¾ 1½	...Fully pd.
10000	Mancha, s, s, Newfoundland	10 0 0	...	¾ ¾	...Fully pd.
12000	Lanetosa, * s, s, Viscaya	115 0 0	...	...	...Fully pd.
75000	Malabar, g, Colombia* 67185 issued (£2 shares)	1 0 0	...	...	...Oct. 1876
40000	Malpaso, g, Colombia* (7400 pref. shares fully paid).....	1 0 0	¾	¾ ¾	...Fully pd.
12000	Menzenberg, c, Honnet, Germany*	5 8 0	...	¾ ¾	...Fully pd.
4558	New Benseng, s, l, Germany	5 0 0	par	...	...Nov. 1876
20000	New Quebrada, c, Venezuela*	5 0 0	4½	4½ 4½	...Fully pd.
50000	Oregon, g, Oregon, s, s, (preference shares)	4 0 0	2½	2½ 2½	...Fully pd.
50000	Panulicilio, c, Chili† (430000 debentures)	4 0 0	1½	1½ 1½	...Sept. 1875
50000	Pestarena United, g, Italy†	3 0 0	...	¾ ¾	...Fully pd.
50000	Providencia and New Rosario, s, Mexico	1 0 0	...	¾ ¾	...Fully pd.
50000	Rica, g, Colombia* (40000 issued)	1 0 0	...	¾ ¾	...Fully pd.
22,151,000	Rio Pinto, * c, Huera, Spain	1 0 0	65½	62½ 63½	...Fully pd.
100000	Rosa Grande, g, Brazil† (£1 shares)	10 0 0	2½	1½ 2½	...Fully pd.
30000	Rubi, c, s, s, Colnburg and Ufa†	10 0 0	...	¾ ¾	...July 1872
10000	San Pedro, c, Chili*	2 0 0	...	¾ ¾	...Fully pd.
10000	Silver Plume, s, Colorado*	1 0 0	...	¾ ¾	...Fully pd.
27500	Snowdrift, s, Colorado*	2 0 0	...	¾ ¾	...Fully pd.
20000	Tecoma, s, Utah*	10 0 0	...	¾ ¾	...Fully pd.
20000	Thornhill Reef, g, Australia*	1 0 0	...	¾ ¾	...Fully pd.
43174	United Mexican, s, Mexico††	25 15 8	2½	2 2½	...May 1876
14000	Utah, g, s, s, Utah*	5 0 0	...	¾ ¾	...Fully pd.
75000	Yorke Peninsula, c, South Australia	1 0 0	...	¾ ¾	...Fully pd.
40000	Yorke Peninsula, c, South Australia Preference	1 0 0	...	¾ ¾	...Fully pd.

† Have made calls since last dividend was paid.

FOREIGN AND MISCELLANEOUS STOCKS, BONDS, AND SECURITIES

CLOSING PRICES.		STOCKS, BONDS, LOANS, AND TRUSTS.	
	Closing Prices.		Closing Prices.
Argentina, 1898, 6 per cent.....	64 95	Foreign and Col. Gov. Trust, 5 p. cent.	63 71
Bolivia, 6 per cent.....	19 21	Do., 5 per cent., 2d issue.....	52 57
Brazilian, 1895, 5 per cent.....	92 94	Do., 6 per cent., 2d issue.....	64 69
Chilian, 1898, 7 per cent.....	101 104	Do., 1872, 4th issue.....	53 58
City of Providence, 8 p.c. coupon bonds	98 100	Do., 1873, 4th issue.....	54 59
Egyptian, 1862, 7 per cent.....	49 50	Prussian, 1870, 6 per cent.....	103 1/2 17 1/2
Do., 1898, 7 per cent.....	103 1/2 51 3/4	Do., 1872, 4th issue.....	11 14
Do., 9 per cent., V.M.L.....	60 63	Russian, 5 1/2 per cent.....	70 71
Do., 9 per cent. guar.....	70 74	Spanish, Quinquennial Mort. 5 p. cent.	92 94
Do., 7 per cent., K.M.L.....	35 36	United States Mort., 8 per cent.....	93 3/4 94 1/4

^b biende *cl*, coal; *c*, copper; *g*, gold; *l*, lead; *s*, silver; *sl*, slate;
s-l, silver-lead; *t*, tin; *x*, zinc.

^c Limited Liability Companies; † quoted on the Stock Exchange.